AEROSOL AGE

THE MAGAZINE OF PRESSURE PACKAGING

THE UNIVERSITY
OF TEXAS
JUL 25 1961
THE LIBRARY

IN THIS ISSUE:

1960-1961 AEROSOL BUYER'S GUIDE

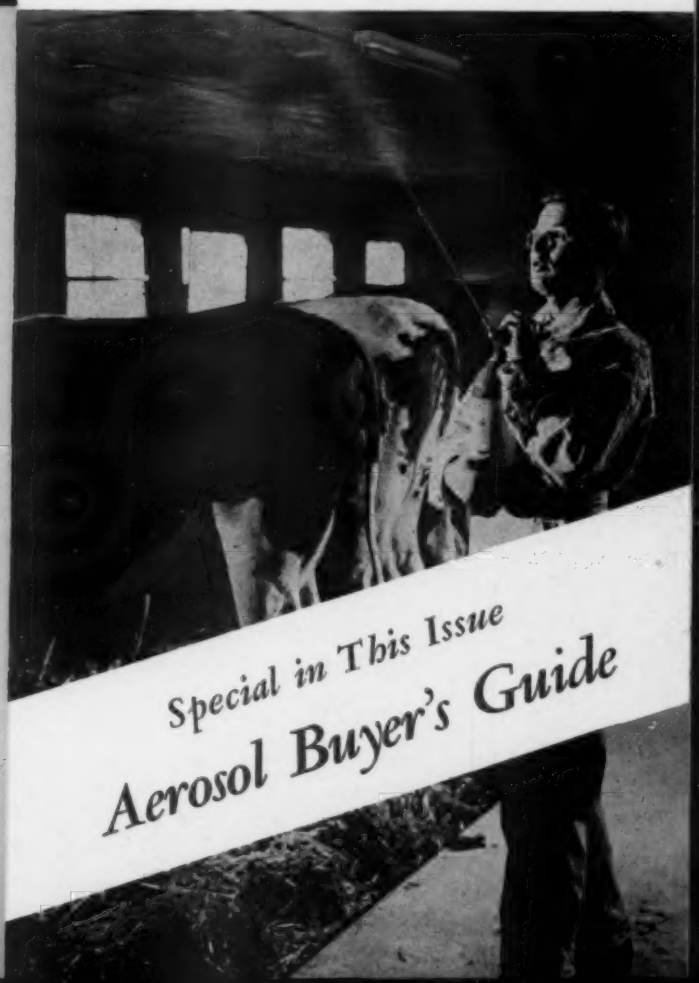
Aerosol Room Deodorants

New Industrial-Type Aerosol

LaMaur Hair Spray Case

The Filler Speaks . . . Part I

OCTOBER, 1960



Special in This Issue

Aerosol Buyer's Guide

JUMP AHEAD
OF COMPETITION

WITH AEROSOL PACKAGING BY STALFORT

The economy of our high speed lines, (150,000 units per shift) plus tremendous warehouse space to hold the filled containers for drop shipments, has led many of the nation's leading brand names to move to Stalfort.

A completely glass enclosed all stainless line for loading food or pharmaceutical products, even powders, under sanitary conditions; is now in operation.

Your inquiries for private label packaging, in aerosol or conventional containers, for production or test runs are invited.

JOHN C. STALFORT & SONS, INC.

319 W. Pratt Street, Baltimore 1, Maryland • *Manufacturing Chemists Since 1868*

A.R.C. invites you to make the darkroom test...

. . . and prove why 87% of all aerosol users prefer the Tilt-Action of the K-38 aerosol valve

Even in pitch darkness—you can't mis-spray the K-38 aerosol valve! Its "tilt-action" automatically aims the spray *away* from the user . . . produces a consistent spray action with *either* hand—and from *any* position!

These are features customers look for—and prefer—in an aerosol product. Features you provide—when utilizing the cold or unmatched fast pressure filling advantages of the K-38. Available in the widest selection of internal meterings, the K-38 also offers the most complete line of spray tips—including the new Mist-Mizer mechanical break-up tip . . . for unpigmented, non-aqueous products. Write for free samples and make your own "darkroom test" today! No cost, no obligation. Write Dept. AA-59.

"TILT ACTION means SALES ACTION"

THE BIG THREE OF A. R. C.
1. K-38 "tilt-action" valves. 2. KN-38 "all nylon" push-down valves. 3. AR-74 "paint and lacquer" valves

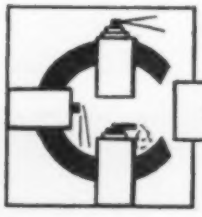
AEROSOL RESEARCH COMPANY
743 Circle Ave. • Forest Park, Ill. • Cable Address: AERESCO, Forest Park, Ill.

10,000

10,000,000

CONTINENTAL FILLING CORPORATION CAN FILL YOUR AEROSOL REQUIREMENTS

Continental Filling Corporation has the facilities, the know-how, the ability to pressure package your product, no matter what your requirements. See for yourself . . . write Continental Filling Corporation today for full information and brochure.



CONTINENTAL FILLING CORPORATION

Danville, Illinois

THIS MONTH'S COVER

Typical of the inroads which "industrial-size" aerosols are making in the agricultural and industrial fields is this insecticide sprayer used for dairy cattle. Although this is one of the earliest uses for the aerosol, improved knowledge of particle sizes (see article on page 80) and prospective candidate materials for aerosol packaging, have extended the use of such larger containers to more specialized industrial uses (see story on page 72).

OCTOBER, 1960 VOL. 5, No. 10

AEROSOL AGE

The magazine of pressure packaging

Feature Articles

AEROSOL BUYER'S GUIDE 1960-1961 35-60

THE TECHNICAL ASPECTS OF AEROSOL AIR FRESHENERS (Part I) 66
By Montfort A. Johnsen

TOXIC NEW AREOSOL FINDS USE IN PAPERMAKING PLANTS 72

WHAT THE HAZARDOUS LABELING LAW MEANS TO THE AEROSOL MARKETER 74
By Robert L. Ackerly

THE FILLER SPEAKS: GENE ROSE DISCOUNTS MARKET SATURATION THEORY 79

AEROSOL PARTICLE SIZE AS A FACTOR IN PRODUCT EFFICIENCY .. 80
By A. H. Yeomans

AEROSOL TECHNIQUES UNVEILS NEW FILLING LINE 89

HAIR SPRAYS ARE PRIZE IN MAJOR COURT BATTLE 90

USE OF HYDROCARBON PROPELLANTS TO REDUCE PRODUCT COSTS 100
By Milton Fowks

Departments

IN THE SPOTLIGHT THIS MONTH 18

INDUSTRY MEETING CALENDAR 18

NEW PRODUCTS AND PACKAGES 93

CONSULTANT'S CORNER 96
By Robert A. Foresman, Jr.

NEWS OF PRESSURE PACKAGING 105

EQUIPMENT, PROCESSES & BULLETINS 125

CUSTOM FILLERS AND PACKERS 141

NEW PATENTS 147

CLASSIFIED ADVERTISEMENTS 149

INDEX TO ADVERTISERS 151

OVER THE TRANSOM 152

Wayne E. Dorland
Publisher

Donald A. Davis
Editor

Eleonore T. Kanar
Technical Editor

Tom C. Clark
European Representative

Ralph Dorland
Advertising Manager

Richard Stearns
District Manager

Doris Metz
Circulation

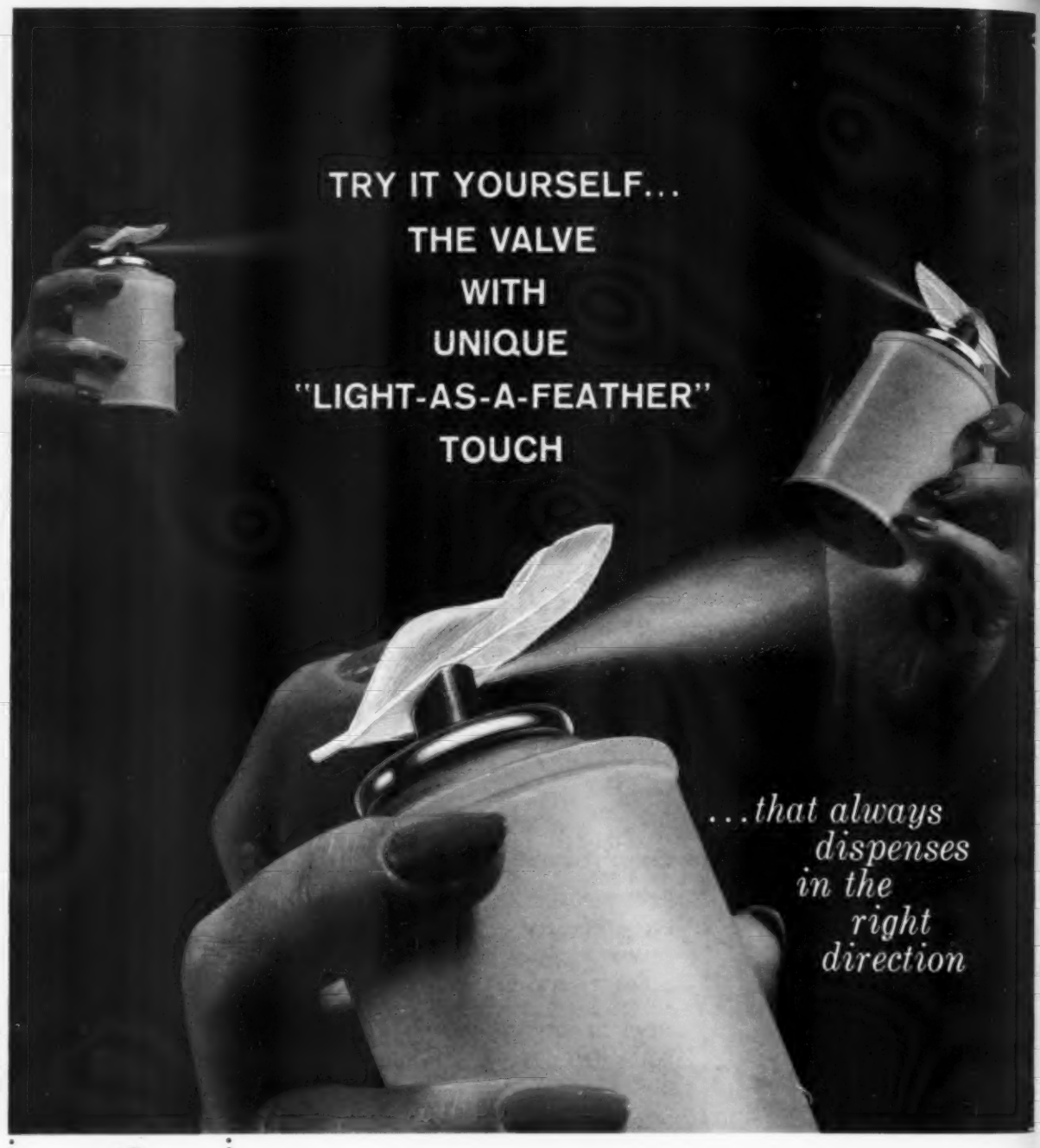
Address all correspondence to Box No. 31, Caldwell, N. J.

Subscription Rates: U. S., one year $3, two years $5; Canada and Pan America one year $4, two years $7; Foreign one year $7, two years $12.

Single Copies: current issue: $0.50. Back issues $1.00. Postage and handling charges for foreign countries on single copies: $1.00.

Published monthly on the 25th by Aerosol Publications, Inc. at 229 West 28th St., New York, N. Y. Advertising, Subscription and Editorial Office: Box No. 31, Caldwell, N. J. New York telephone: BArclay 7-7121. Advertising rates on application. Closing date for copy—10th of the month preceding month of issue.

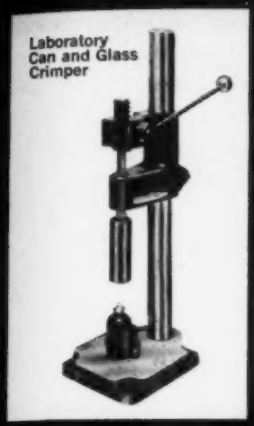
Second-class mail privileges authorized at Post Office, Caldwell, New Jersey, with additional entry at New York, New York.



Meet experienced engineers in the Aerosol Valve Industry. ■ Talk with laboratory people who can help analyze your product. ■ Learn the value of a century-old tradition of quality. ■ See up-to-the-minute production facilities. ■ In short . . . MEET SCHRADER . . . and see for yourself.

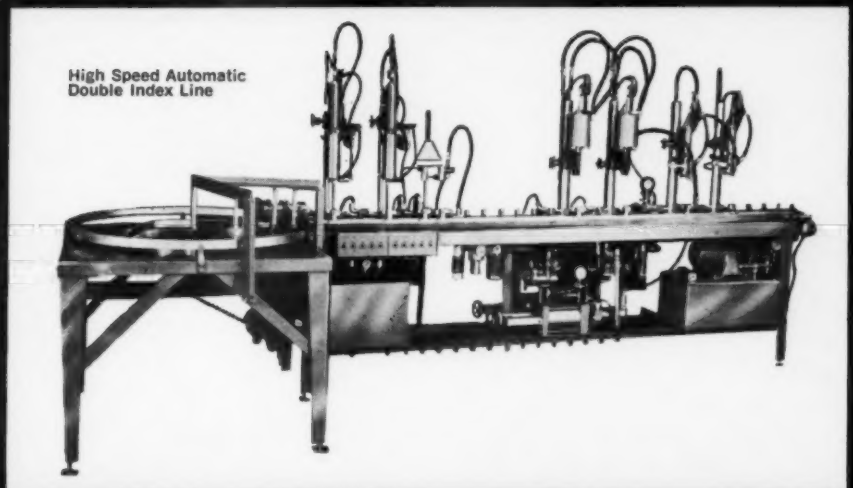
Schrader® a division of SCOVILL Aerosol Valves

A. SCHRADER'S SON, *Division of Scovill Manufacturing Company, Inc.*, 470 Vanderbilt Ave., Brooklyn 38, N. Y.



PRESSURE FILLING EQUIPMENT
from
COMPLETE FILLING LINES
to
SMALL LABORATORY EQUIPMENT

CALL
JG
MACHINE
WORKS
FOR FREE
CONSULTATION



JG MACHINE WORKS SPECIALIZES IN PRECISION-ENGINEERED

PRESSURE FILLING AEROSOL EQUIPMENT

- **For all types of Containers:** metal, glass, plastic (rigid or semi-rigid).
- **For all Formulations**
- **Complete line of Standard Units,** Components and Attachments in general use.
- **Advanced Designs in equipment** incorporating newest refinements for speedier, more efficient filling.
- **Custom-Built** Machines, Mechanisms, and Assembly Systems in all capacities for regular and special-problem requirements.
- **Expert Reconditioning and Reconversions.**
- **Engineering Advisory Services. Projections.**

We build production machines to custom-made craftsmanship. Our dependable standard lines of pressure-filling aerosol equipment represent important advances in this field. The services of our experienced engineering staff are available to you for practical solutions of your problems, including especially designed units to meet particular requirements. Budgets are respected. No charge for consultation.

THE JG LINE OF AEROSOL MANUFACTURING EQUIPMENT IS COMPLETE, INCLUDING—

- Ball Feeders
- Drive Units
- Bottle Crimpers
- Purgers
- Can Crimpers
- Product Fillers
- Conveyors
- Propellant Accumulators
- Propellent Reclaimers
- Pumps
- Unscramblers
- Water Baths

PROMPT DELIVERIES on all items.

JG MACHINE WORKS INC.
452 West 46th St., New York 36, N.Y. • Circle 6-6373

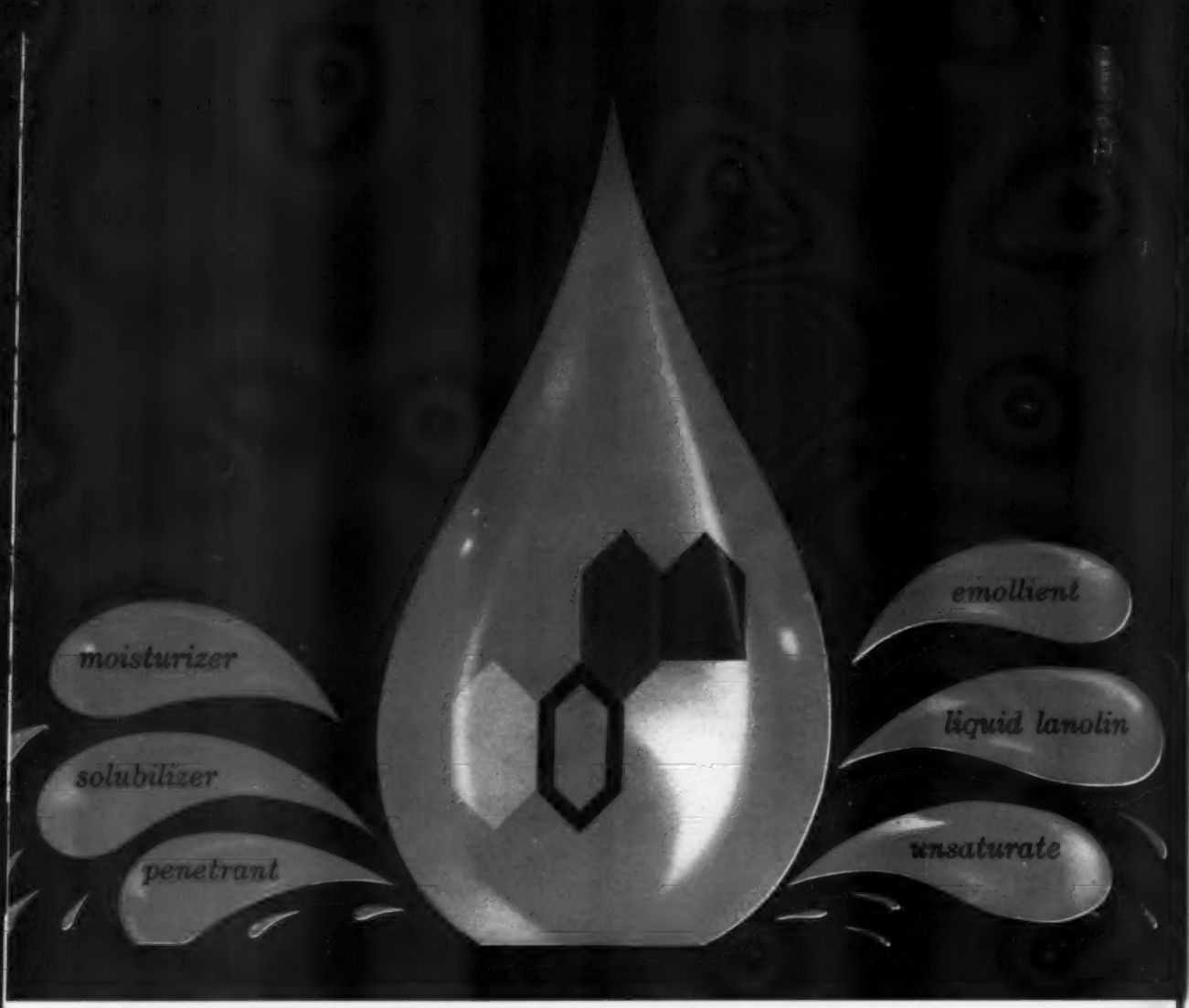
J. G. MACHINE WORKS Dept. AO10
452-458 West 46th Street
New York 36, New York

Gentlemen:
I am interested in AEROSOL FILLING EQUIPMENT.

Please:
- ☐ Send me more information.
- ☐ Send me specific information on .....
- ☐ Call me (collect) on ..... for an appointment.
- ☐ Stop in and have a "chat" with me on .....

I understand there is no obligation for any technical advice, detailed information or consultation given me.

Name ..... Title .....
Firm .....
Address .....
City ..... Zone ..... State .....



AMERCHOL Lanolin Derivatives

add specific new functional properties to lanolin's most active components

AMERCHOL Derivatives and lanolin do have a common denominator, but the similarity ends there. AMERCHOL Derivatives add special properties and specific functional effects to lanolin's most active components. These unusual materials provide the formulating chemist with valuable new tools for producing superior cosmetic and aerosol products.

moisturizer
AMERCHOL L-101® —powerful *free-sterol* depressant of interfacial tension. Excellent auxiliary emulsifier. Adds gloss, soft textures, and superb emollience to formulations and imparts valuable moisturizing effects to the skin.

solubilizer
SOLULANS® —*ethoxylated derivatives.* Water soluble, yet emollient! Solubilizers of great general utility. Impart excellent plasticizing, lubricating, and conditioning qualities at low concentrations.

Complete technical data, samples and suggested formulas are available from our research laboratories.

penetrant
ACETULAN® —*acetylated lanolin alcohols.* Non-oily hydrophobic liquid emollient. Penetrates and lubricates leaving a persistent soft after-feel that is truly remarkable.

emollient
MODULAN® —*acetylated lanolin.* Our own patented product. An unusual hypo-allergenic emollient. Non-tacky, oil soluble, and hydrophobic. Excellent for emulsions, soaps, baby oils, and brilliantines.

liquid lanolin
VISCOLAN® —*dewaxed lanolin.* Supplies all the natural benefits of lanolin in intensified, convenient liquid form. Oil-soluble, low odor and color.

unsaturate
POLYLAN® —*essential polyunsaturate.* Liquid *wax ester.* Combines the natural benefits of linoleic acid with the softening, protective, and conditioning properties of lanolin's most active components.

Amerchol
AMERICAN CHOLESTEROL PRODUCTS, INC.
Amerchol Park • Edison, New Jersey

HERE IS THE KEY
TO YOUR AEROSOL'S SUCCESS...

Spray-valve and container manufacturers will tell you that the sales success of an aerosol product depends as much upon package performance as upon the quality of the product itself. By the same token, perfume and propellant suppliers will say it is *their* product's contribution that counts. Each with his own pet interest at stake will claim credit for your product's success. The greater probability is that a smartly put together *combination* of these elements – propellant, perfume, package and product – is the real answer to your aerosol's success. Recognizing this fact, we suggest when you *are* ready to consider the perfuming phase of your next aerosol specialty – whatever it might be – that you let us work with you in the development of an appropriate fragrance. Our long, pioneering experience in this field more than justifies any confidence you may repose in us. And we promise you a fragrance of which you can well be proud.

LET THIS CONTAINER BRING YOU THE CORRECT ANSWER TO YOUR AEROSOL PERFUME NEEDS

Just send us a request on your letterhead indicating the type of aerosol product you plan to package and the character of perfume you prefer to use. It will help us to serve you even better if you can also send along an unperfumed sample of your product. Our laboratories will then study your problem and submit for your consideration, sample aerosol formulations containing appropriate, long-lasting, stable odors at moderate cost... non-clogging perfume compositions that will prove completely compatible with the propellant and all other materials used. This is the surest way to get a correctly made fragrance for your product and to test it under conditions of actual use.

FRITZSCHE BROTHERS, Inc.

76 NINTH AVENUE NEW YORK 11, N. Y.

Branch Offices and *Stocks: Atlanta, Ga., Boston, Mass., *Chicago, Ill., Cincinnati, Ohio, Greensboro, N. C., *Los Angeles, Cal., Philadelphia, Pa., San Francisco, Cal., St. Louis, Mo., Montreal and *Toronto, Canada; *Mexico, D. F. and *Buenos Aires, Argentina. Plants: Clifton, N. J. and Buenos Aires, Argentina.

Whether you need a
SPRAY, STREAM or FOAM
Products under pressure
never had it so good!

Continental's new
PRESSURE TAB SIDE SEAM
with Tri-Com solder
now permits higher pressure
than any other 3-piece aerosol.

Continental's improved aerosol can REALLY takes pressure — more than any other 3-piece can being manufactured. The can's unique pressure tab side seam, together with Continental's improved solder method, form the greatest bond stability available.

That's not all—the new can provides greater protection over longer periods... holds higher pressures at elevated storage temperatures... increases the range of propellent mixtures useable in containers... paves the way for expansion in the entire aerosol industry.

Ask your Continental man today.

CONTINENTAL CAN COMPANY

Eastern Division: 100 E. 42nd St., New York 17
Central Division: 135 S. LaSalle St., Chicago 3
Pacific Division: Russ Building, San Francisco 4
Canadian Division: 790 Bay Street, Toronto 1
Cuban Office: Apartado 1709, Havana, Cuba

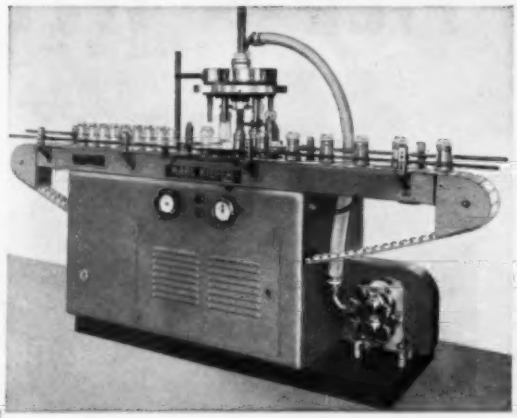
AE

KIEFER

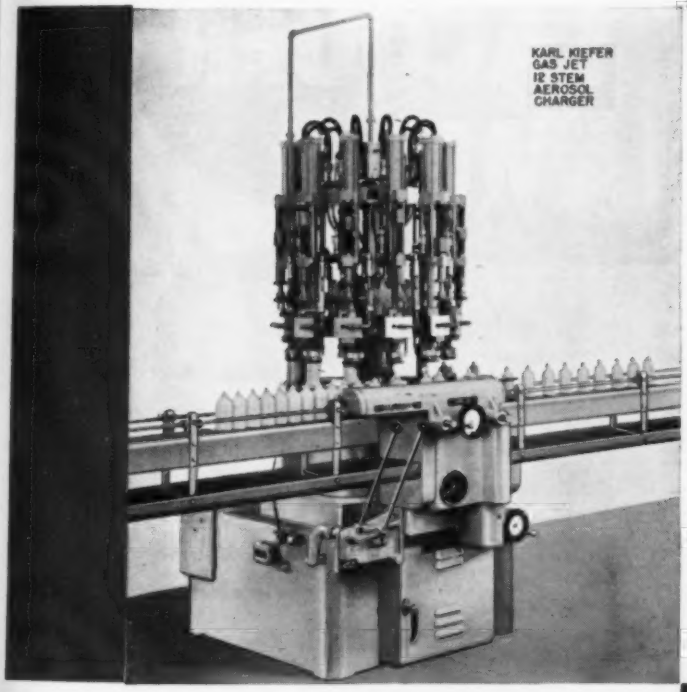
The most meaningful name in

AEROSOL CHARGERS IS "Gas-Jet"

Recognition of extreme accuracy proven by CUSTOM LOADERS' selection and SHOPPERS' acceptance. All assuring that it is easily the best equipment market affords.



II. CADET VARI-VISCO for Viscous Products



I. 12-STEM GAS-JET AEROSOL CHARGER

Features of each machine are designated by corresponding roman numerals.

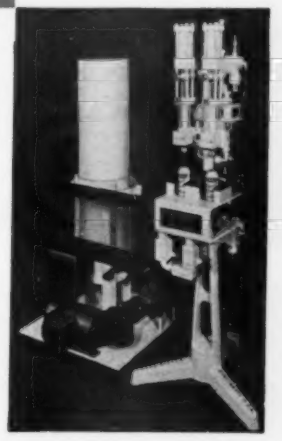
I. Can do up to 200 a minute. (Greater and lesser chargers are available).

II. For exact measuring of either LIQUIDS or VISCOUS products.

III. For perfect delivery of liquids or viscous materials.

IV. Operator manually feeds up to 36 aerosol cans a minute. Rapid size change-over.

III. MONO-PISTON VISCOUS FILLER



IV. 2-STEM GAS-JET Jr. AEROSOL CHARGER

An AEROSOL BROCHURE is yours for the writing.

The Karl Kiefer Machine Co.

934 MARTIN STREET CINCINNATI 2, OHIO

NEW YORK • BOSTON • CHICAGO • SAN FRANCISCO • PHILADELPHIA • TORONTO
HOUSTON • VANCOUVER • SAVANNAH • LOS ANGELES • LONDON, ENGLAND

FILL WITH CONFIDENCE

The Original & Approved Formula

SPRAY LACQUER ENAMEL

- Loaders and distributors fill with confidence using spray lacquer enamels manufactured by National Chemical & Plastics Company.
- QUALITY, PERFORMANCE AND RELIABILITY are our watch-words. Surveys confirm that our products are the finest in the industry.
- If you are still searching for a better aerosol coating, why not evaluate our product? We are confident that you will be completely satisfied!

Write or call for information:

THE NATIONAL CHEMICAL & PLASTICS COMPANY

1424 Philpot St. Baltimore 31, Md.

NOW... A New, Purified
PYRETHRUM CONCENTRATE
NON-STAINING! LOW-COLOR!

PRENTISS NEW PROCESS PYRETHRUM — PURIFIED — LOW COLOR — NON STAINING

Prentiss GOLD SEAL Pyrethrum and Pyronyl Concentrates Purified! Low-color! Non-staining! . . . and you'll gain these formulation exclusives

1. Full Potency Pyrethrum Concentrate
2. Non-Staining. No ugly green or yellow precipitates
3. Completely Soluble In Kerosene. No filtration during manufacture needed
4. Compatible In All Carriers. Additional auxiliary chemicals not required
5. Stable . . . all chlorophyll is removed

Technical information and samples available upon request.

Ronald McIntyre, chief engineer for Cooper, McDougald & Robertson, Ltd., Berkhamsted, Herts., England, adjusts the 12-foot instrument panel on the new type pyrethrum extraction unit which his company installed in the Newark, N. J. plant of Prentiss. The unit, which employs a tripe distillation process, is the first of its kind to be installed in the United States.

PRENTISS DRUG & CHEMICAL CO. INC. NEW YORK, N.Y.

Prentiss Drug & Chemical Co., Inc.

101 WEST 31st STREET, NEW YORK 1, N. Y. • 9 SOUTH CLINTON STREET, CHICAGO 6, ILL.

Atlanta • Detroit • San Francisco • Los Angeles • Toronto • Montreal • Fort Worth • Pittsburgh • Philadelphia

•Want to pack hard-to-hold high-pressure products?

or fragile but corrosive ones?

Count on Crown Spra-Tainers

Hard-to-hold high-pressure products like propane gas are safely packed in seamless 12-ounce Spra-Tainers. Fragile pharmaceuticals and fragrant cosmetics, containing corrosive ingredients, require the perfect corrosion-resistant internal coating of the Crown Spra-Tainer. Your aerosol product—whatever it may be—deserves a Crown container. Crown—pioneer and largest producer of aerosol cans, will be glad to help you. May we discuss aerosol packing with you?

CROWN
for cans · crowns · closures · machinery

CROWN CORK & SEAL COMPANY, INC., 9300 Ashton Road, Philadelphia 36, Pa.

AB

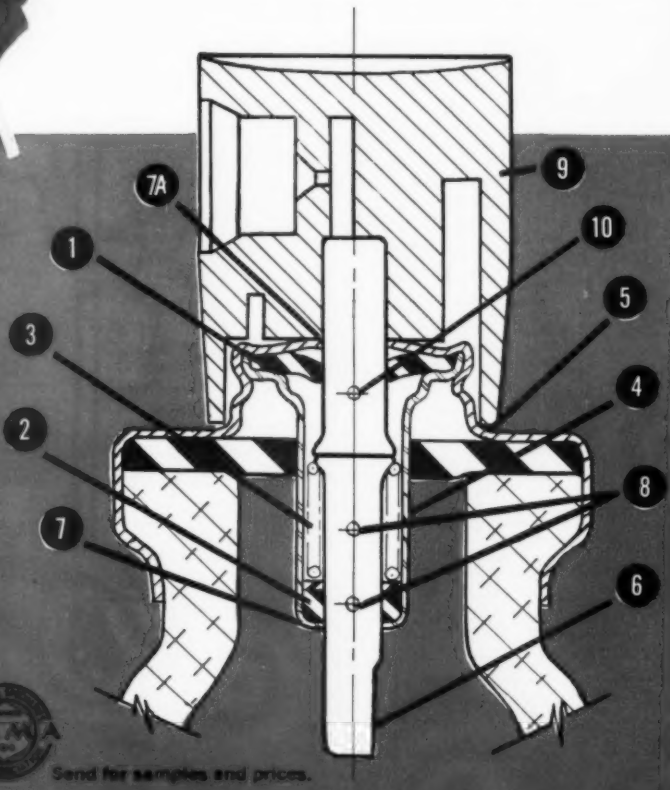
Choose the RIGHT Valve for Your Product!

the EMSON METERED VALVE*

. . . the metered valve, proven by time and use to be the right valve for pharmaceutical, cosmetic, household, garden and chemical products.

Some of the various dosage valves produced by Emson

Valves for 1" open containers now available with new mechanical break-up button.



This is the way it works:

Simply depressing the button (#9) first closes the inlet valve and then opens the outlet valve to release material trapped in the tank through the orifice (#10). Regardless of whether the button is depressed slow or fast, the same amount comes out each time.

Here is why Emson is RIGHT:

- UPPER VALVE SEAL (#1), which controls the outlet valve is seated in a specially designed housing which permits it to flex and swell (swelling depends on the product). This "diaphragm" type seal prevents sticking and accounts for the soft "finger tip" action.
- When the valve is actuated, the RETURN SPRING (#3) exerts pressure against the INLET SEAL (#2) to assure maximum sealing of the inlet valve. (Drawing shows outlet valve open and inlet valve closed).
- The TANK (#4) can be varied in size depending on the size of the dose required. It is made of stainless steel. (Other materials, such as brass, tin plate and plastic can be used).
- EMSON'S exclusive dome type "mounting" FERRULE (#5) makes a positive seal with the tank.
- The partial flat on STEM (#6) provides a fast refilling of the tank, when the valve is released for its next actuation.
- (#7 and #7A) are important BEARING POINTS which guide the long movement of the stem to prevent any tilting. (Tilting of the stem causes leakage). This patented feature is exclusive with EMSON.
- The ACTUATING BUTTON (#9) controls downward movement of the stem.
- The TWO HOLES (#4) located in the bottom part of the stem are especially engineered for uniform pressure filling. Another exclusive feature of the EMSON metered valve.

Millions have been sold by EMSON and its sub-licensees.

* Covered by patent #2,721,010 and other patent pendings in U.S. and foreign countries.

Don't forget to inquire about the New EMSON Nitrogen Metered Valve.

Send for samples and prices.

MAKING METERED VALVES IS OUR BUSINESS

EMSON RESEARCH, INC.

116 BURR COURT BRIDGEPORT 5, CONN.

EDison 5-2513

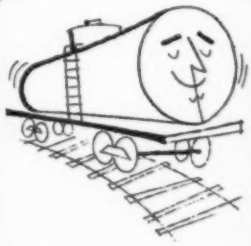
Are you taking advantage of all these Du Pont services?

ON-THE-SPOT TECHNICAL SERVICE

Du Pont know-how and experience come to you wherever you are, whenever you need them . . . through trained technical representatives. These men are aerosol specialists and will work with you on production problems . . . offer you the facilities of the "Freon" Sales-Service Laboratory.

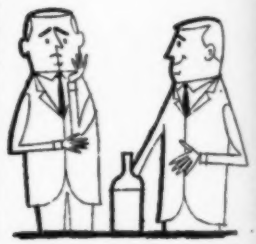
MARKETING SERVICE

Du Pont regularly conducts surveys, clinics and seminars to bring you up-to-the-minute market information on aerosols. No other manufacturer of propellents offers such comprehensive studies. These facts and figures can help you pinpoint new markets for increased sales and profits.



PROMPT SERVICE ON "FREON"

There are three Du Pont plants manufacturing "Freon" in the U.S., one in Canada and a network of warehouses to assure you of virtually local delivery . . . fast and efficient. "Freon" propellents are recognized throughout the aerosol industry for their unvarying high quality and top performance.



PRODUCT DEVELOPMENT SERVICE

Working on a new aerosol product? Du Pont may be able to help you with information on new or improved aerosol techniques worked out by its product development research team. These men can save you time and expense in experimental work by assisting you with their knowledge of formulations and packaging.

Basic research in aerosol is still another Du Pont activity that can help you. It's conducted on a continuing basis and new developments are promptly passed on to you to assist in market expansion.

FREON®
PROPELLENTS

DU PONT
REG. U.S. PAT. OFF.

BETTER THINGS FOR BETTER LIVING . . . *THROUGH CHEMISTRY*

In addition, Du Pont national advertising on "Freon" helps establish a quality product in the minds of your customers . . . contributes to a better sales "climate" for you. E. I. du Pont de Nemours & Co. (Inc), "Freon"* Products Division 3210 Wilmington 98, Delaware.

""Freon" is Du Pont's registered trademark for its fluorocarbon propellents.*

POLAK'S FRUTAL WORKS INC., MIDDLETOWN, N.Y.

AMERSFOORT, HOLLAND • PARIS, FRANCE • BREMEN, GERMANY • BRUSSELS, BELGIUM • SOFLOR LTD PERIVALE, ENGLAND

INDUSTRY MEETING CALENDAR

Chemical Specialties Mfrs. Assn., Meeting of Board of Governors, Division Executive Boards, and Committees, Hotel duPont, Wilmington, Del.....Oct. 3-5

Society of Cosmetic Chemists, N. Y. Chapter, Hotel George Washington, New York.....Oct. 5

French Packaging Institute, First International Packaging Machinery Show, Paris, France.....Oct. 14-23

Annual Hardware-Houseware Fair of the United States, Hotel Barbizon-Plaza, New York..Oct. 9-14

National Hardware Show, Coliseum, New York.....Oct. 10-14

Interkama, 2nd International Congress and Exhibition for Instrumentation and Automation, Dusseldorf, Germany .....Oct. 19-26

Canadian Manufacturers of Chemical Specialties Association, 3rd annual convention, Queen Elizabeth Hotel, Montreal....Oct. 24-26.

National Paint, Varnish and Lacquer Association, 73rd annual meeting, Drake Hotel, Chicago..... .....Oct. 27-29

Packaging Institute, 22nd annual national packaging forum, Statler-Hilton Hotel, New York..... .....Oct. 31-Nov. 2

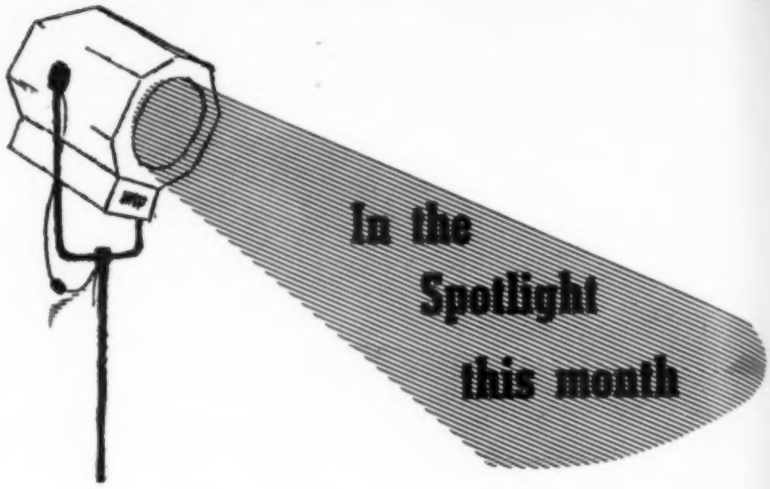
Society of Cosmetic Chemists, N. Y. Chapter, Hotel George Washington, New York.....Nov. 2

Toilet Goods Association, scientific section, fall meeting, Waldorf Astoria Hotel.....Nov. 30

Chemical Specialties Manufacturers Assn. 47th annual meeting, Hollywood Beach Hotel, Hollywood, Fla. .....Dec. 3-9

Chemical Specialties Manufacturers Association, Meeting of Board of Governors, Division Executive Boards and Committees, Hotel Peabody, Memphis, Tenn. March 8-9, 1961

National Packaging Exposition and National Packaging Conference of American Management Association, Exposition Center, Chicago..... .....April 10-13, 1961

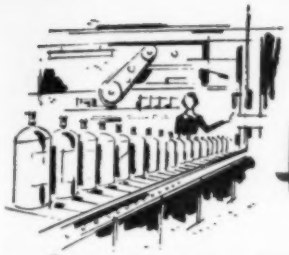


- **Aerosol Buyer's Guide-1960-1961** . . . The fourth annual buyer's directory, devoted exclusively to the pressurized packaging field, is the feature of this issue. Alphabetical listings of firms offering services, components, raw materials, and equipment begin on page 35.

- **The Technical Aspects of Aerosol Air Fresheners** . . . The Editors of **Aerosol Age** predict that this article, written by Montfort Johnsen, will become the most quoted source on the subject over the next ten years. In the first of three articles beginning on page 66, Mr. Johnsen goes into detail on the general approach to the problem, the causes of odors, and the use of one leading material in aerosol room deodorants.

- **Toxic New Aerosol Finds Use in Paper Making Plants** . . . Newest industrial type aerosol, a far cry from the beautiful cologne and cosmetic packages on the market today, finds a profoundly important use in the manufacture of paper. Story and pictures on page 72.

- **Particle Size as a Factor in Product Efficiency** . . . The U. S. Dept. of Agriculture, source of so many excellent projects to improve aerosol packages, comes up with a practical method of spray particle analysis. The article by A. H. Yeomans appears on page 80.



Here's proof-by-Comparison

why more and more aerosol manufacturers are using

NEWMAN-GREEN AEROSOL VALVES

You get eleven major aerosol valve advantages—four are exclusives—when you buy Newman-Green valves. No other aerosol valve in the industry has *all* these features in a single valve. Creative Newman-Green, Inc. engineering produced this simplified valve design to help you in selling more aerosol products. Give us a call today and let our engineering services and aerosol valves help you in designing and manufacturing an even better aerosol product.

	ADVANTAGES	Newman-Green Inc.	Company A	Company B	Company C	Company D	Company E
1	Pressure fills fast because it does not fill through metering orifices.	✓		✓			
2	All metering orifices in spray head easily accessible for cleaning.	✓	Exclusive Newman-Green Feature				
3	360° at spraying surface—twist top.	✓	✓		✓	✓	✓
4	No small orifices drilled in metal parts.	✓	Exclusive Newman-Green Feature				
5	Can be used on metal or glass containers.	✓	✓			✓	✓
6	Curved surface on spray button reduces finger fatigue.	✓		✓		✓	✓
7	Spray heads easy to apply after pressure filling.	✓					✓
8	Delivery tubes swedged on—not slipped over—valve body.	✓	Exclusive Newman-Green Feature				
9	Excessive swelling of gasket not detrimental to operation of valve.	✓				✓	✓
10	Spray pattern can be varied completely by changing only spray head.	✓	Exclusive Newman-Green Feature				
11	No dissimilar metals used in valve parts.	✓	✓				

NEWMAN-GREEN | *Creative Aerosol Valve Engineering*

151 Interstate Road, Addison, Illinois

Pressurize Your Sales...

with MM&R Fragrances

Let MM&R put a powerful urge to buy in your aerosols. MM&R perfume oils overcome even the heaviest odors of basic chemicals and impart a refreshing, sales-stimulating fragrance to your products, at low cost.

New MM&R perfume oils are being created constantly to keep abreast with rapid advancements in the aerosol field and to meet the special requirements of our customers.

MM&R's cumulative knowledge and experience, gained during more than sixty-three years in the development of perfume oils — over fifteen in connection with aerosols — are at your service in increasing the salability of your products.

Write now for complete information.

MAGNUS, MABEE & REYNARD, INC.

The World's Most Famous Supplier of Essential Oils, Concentrated Flavors and Basic Perfume Oils

18 DESBROSSES STREET, NEW YORK 13, NEW YORK
321 NORTH LaSALLE STREET, CHICAGO 1, ILLINOIS

AE

IF YOU ARE CONSIDERING AEROSOL PACKAGING FOR INCREASED PHARMACEUTICAL SALES...

PFIZER HYDROCORTISONE, NEOMYCIN, POLYMYXIN AND VITAMINS WILL INTEREST YOU!

Firmly convinced that aerosol dispensers can open new doors to pharmaceutical sales, Pfizer continues to cooperate closely with the pressure packaging industry.

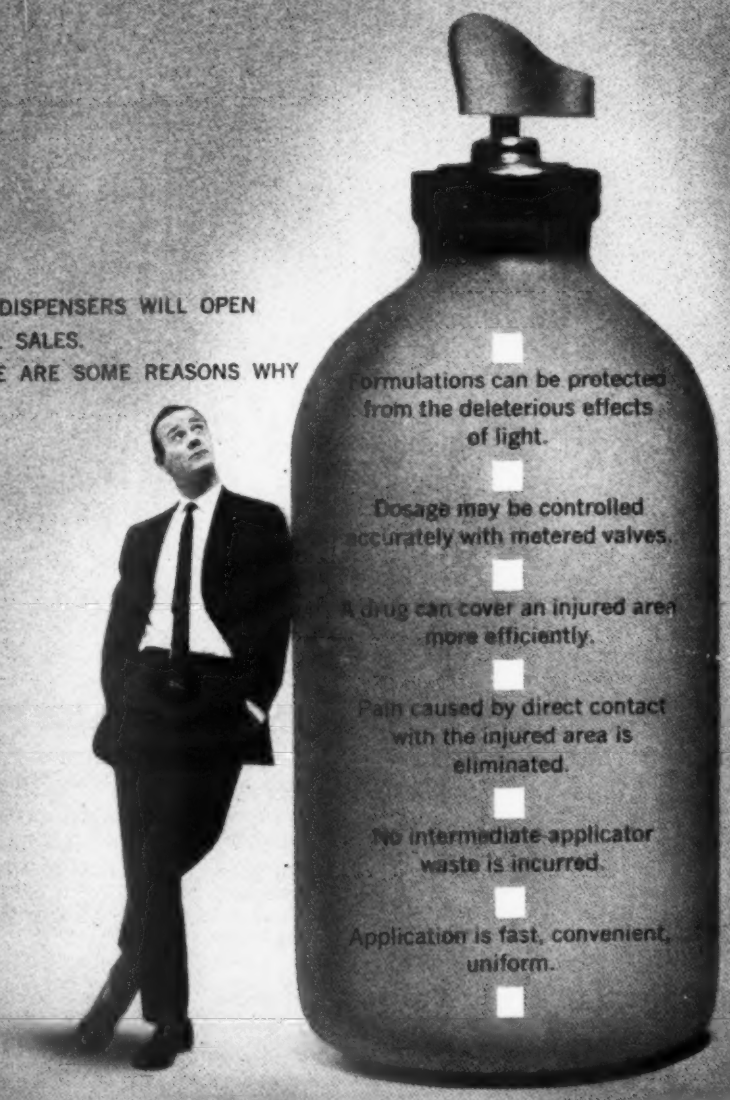
The purpose: To develop formulations that will permit pharmaceutical manufacturers to use most profitably the advantages inherent in pressure-packed containers.

Typical findings: Preparations utilizing Pfizer Hydrocortisone, Neomycin, Polymyxin and vitamins are enhanced by the natural ability of pressure containers to maintain formulations completely free from atmospheric contamination.

The stability of liquid vitamins is substantially increased because the preparations are overlayed by inert gas for the life of the container.

Write to Pfizer for reprints of the interesting report "Pressure-Packed Pharmaceuticals." Technical Bulletins on Pfizer Polymyxin, Neomycin and Hydrocortisone are also available on request.

PFIZER BELIEVES THAT AEROSOL DISPENSERS WILL OPEN NEW DOORS TO PHARMACEUTICAL SALES.
HERE ARE SOME REASONS WHY


Formulations can be protected from the deleterious effects of light.
Dosage may be controlled accurately with metered valves.
A drug can cover an injured area more efficiently.
Pain caused by direct contact with the injured area is eliminated.
No intermediate applicator waste is incurred.
Application is fast, convenient, uniform.

Manufacturing Chemists for Over 100 Years

Pfizer

Science for the world's well-being

CHAS. PFIZER & CO., INC.
CHEMICAL SALES DIVISION
630 Flushing Avenue, Brooklyn 6, N.Y.
Branch offices: Clifton, N. J.; Chicago, Ill.; San Francisco, Calif.; Vernon, Calif.; Atlanta, Ga.; Dallas, Tex.; Montreal, Can.

PROFITABLE PARADOX:

EFFECTIVENESS GOES UP...
COSTS COME DOWN...
with

SULFOXIDE

in your insecticide formulations!

Penick's patented insecticidal synergist, Sulfoxide, multiplies the potency of your pyrethrum formulations ten-fold!

That means you achieve a high degree of effectiveness with lower pyrethrins concentrations, so you increase profits, lower material costs.

You give your product greater stability, too. Sulfoxide is compatible with most agricultural, industrial and household insecticides. It's low in toxicity and has a mild, non-irritating odor.

Generous working sample, suggested starting formulations and technical data on request.

PENICK

Farm Chemical & Insecticide Division
S. B. PENICK & COMPANY • 4161 BECK AVENUE, ST. LOUIS 16, MISSOURI
NEW YORK CHICAGO LOS ANGELES SAN FRANCISCO PORTLAND, ORE.

Now you can tamperproof your aerosol container with a Du Pont "Cel-O-Seal" Band

Here are the important advantages this new sealed container provides:

- Ends casual sampling, cap switching and in-store damage.
- Protects product quality and full content from packaging line to consumer.
- Builds consumer and retailer confidence.
- Helps get your food, drug and household products into more self-service stores.
- Cuts costs. Newly designed single-shell cap, plus "Cel-O-Seal" band, costs less in most cases than old-style, unprotected double-shell cap.
- Gives extra labeling space.
- Has design flexibility. "Cel-O-Seal" band can be printed in one or a combination of eye-catching colors to complement your package design.

DU PONT
REG. U. S. PAT. OFF.

BETTER THINGS FOR BETTER LIVING... *THROUGH CHEMISTRY*

CEL-O-SEAL BANDS
REG. U. S. PAT. OFF.

MAIL COUPON TODAY FOR FULL FACTS!

E. I. du Pont de Nemours & Co. (Inc.)
"Cel-O-Seal" Div. AA
River Road, Buffalo 7, N. Y.

Please have a Du Pont "Cel-O-Seal" representative contact me.

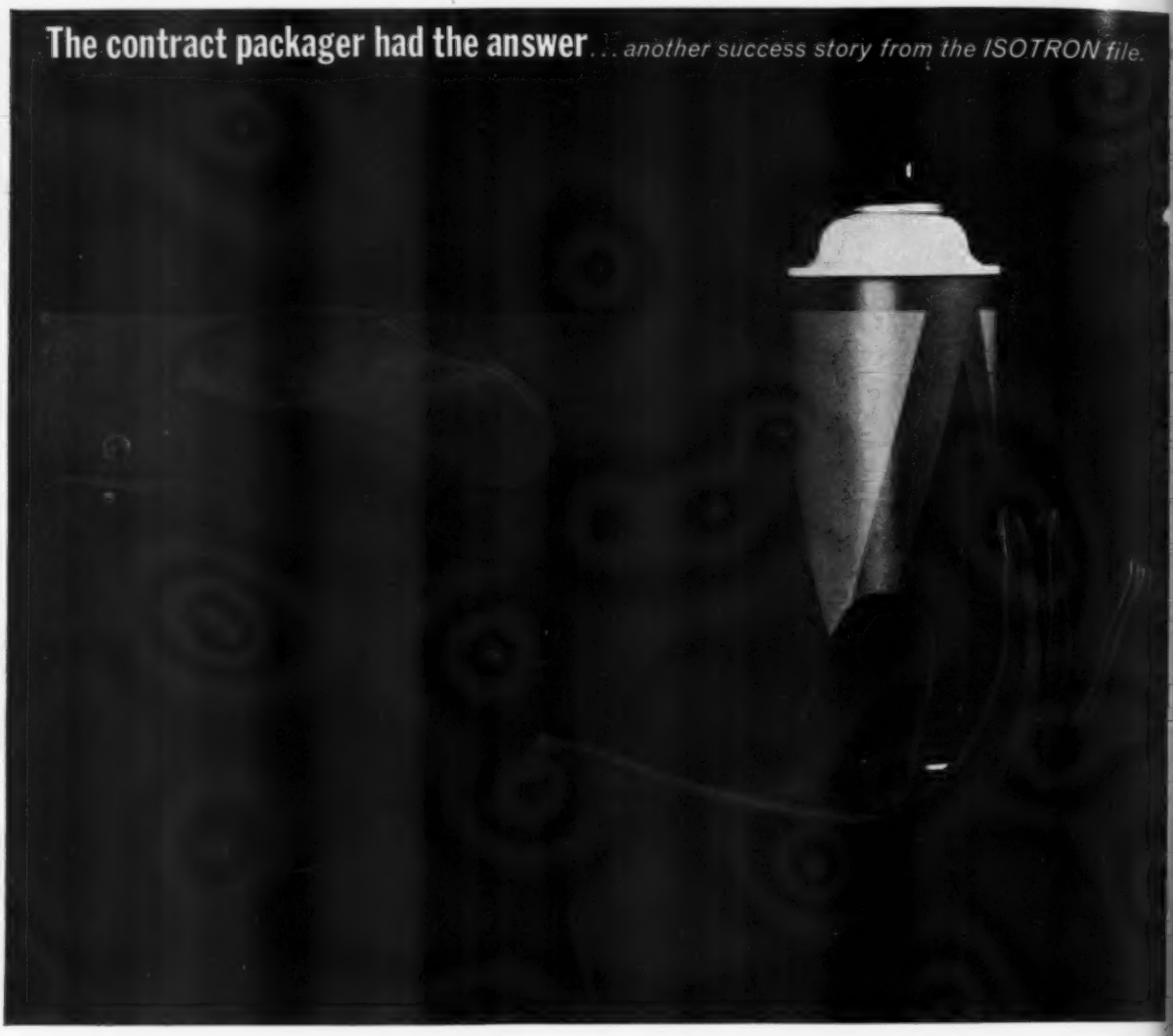
Name_____

Title_____

Firm_____

City_____ State_____

The contract packager had the answer... *another success story from the ISOTRON file.*



His "kid glove loading" insures aerosol quality

Some of the world's most pampered aerosol products start in the air-conditioned, dust-free and humidity-regulated plant of Gard Industries, Inc., a pioneer contract packager of Northfield, Ill. Controlled-quality methods from testing to loading assure consistency and stability for all types of quality aerosol packaged sprays, foams and powders.

Whatever you want to market, Gard offers years of experience, plus complete, modern facilities for research, manufacturing and marketing of aerosol products. Special environmental-controlled production lines are available for high-speed, isolated filling of quality drugs and cosmetics; paints, insecticides and other household products; and food products. A separate department is maintained for small runs on any product. If your needs involve testing, analysis, formulation or marketing assistance, Gard can serve you well.

Experienced packagers like Gard Industries know well the importance of the proper container, valve and propellent to the success of your product on the market. Increasingly often, they specify ISOTRON® . . . the extra-pure, extra-dry, factory-sealed propellents that help insure the consistent quality of your aerosol product.

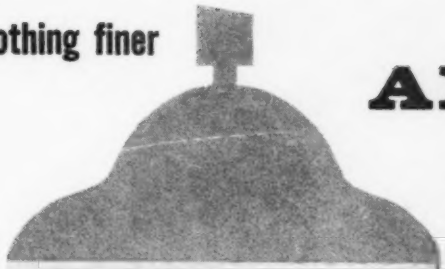
ISOTRON—*The Key to Modern Living*

Pennsalt Chemicals
ESTABLISHED 1850

Isotron Department
PENNSALT CHEMICALS CORPORATION
Three Penn Center
Philadelphia 2, Pa.

Psst! there's nothing finer

Perfumes for AEROSOLS by Synfleur



SACHET SPRAYS

Lavender	DH-66
Cologne	DH-111
Cologne Bouquet	DH-117
Carnation	DH-131
Cedar Wood	DH-132

COLOGNES — PERFUMES

Cologne	DH-23
Bouquet	DH-28
Floral	DH-57
Lavender	DH-66
Lilac	DH-72
Floral Cologne	DH-83
French Oriental	DH-87
French Bouquet	DH-90
Cologne	DH-111
Jasmin Bouquet	DH-120
Mist Bouquet	DH-125
Mist Bouquet	DH-130
English Lavender	DH-133
Oriental Bouquet	DH-138
Sandalwood	DH-149

HOUSEHOLD & AIR FRESHENER SPRAYS

Cologne	DH-23
Siberian Pine	DH-29
Pine Wick Type	DH-30
Xmas Tree Pine	DH-31
Meadowsweet Bouquet	DH-34
Bouquet	DH-41
Lavender Bouquet	DH-45
Rose	DH-55
Orange Blossom	DH-59
New Mown Hay	DH-69
Spice	DH-74
Pine Virgin	DH-112
Cool Mint	DH-115
Spice Lavender Bouquet	DH-129
Carnation	DH-131
Medicinal	DH-139
Cool Pine	DH-144
Lavender Bouquet	DH-150

HAIR LACQUER PVP

Cologne	DH-23
Rose	DH-55
Orange Blossom	DH-59
Floral Bouquet	DH-79
French Oriental	DH-87
Oriental	DH-103
Cologne Bouquet	DH-117
Carnation	DH-131

SHAVE CREAMS, SHAMPOOS, SOAPS

Spice	DH-40
Lavender Bouquet	DH-44
Oriental Bouquet	DH-54
Rose	DH-55
Spicy Floral Bouquet	DH-56
Lilac	DH-72
Bay Rum	DH-89
Lemon	DH-94
Carnation	DH-131
English Lavender	DH-133
Lavender Bouquet	DH-150

PHARMACEUTICALS

Spice	DH-40
Medicinal	DH-70
Bay Rum	DH-89
Lemon	DH-94
Lilac Bouquet	DH-95
Jasmin Bouquet	DH-123
Floral Bouquet	DH-147

CREAMS, LOTIONS, COSMETICS

Cologne	DH-23
Spice	DH-40
Lavender Bouquet	DH-44
Oriental Bouquet	DH-54
Rose	DH-55
Orange Blossom	DH-59
Lavender	DH-66
Floral Bouquet	DH-76
Lemon	DH-94
Lily Muguet	DH-102
Lavender	DH-119
Carnation	DH-131
Cologne	DH-142
Floral Bouquet	DH-147

MOTH & INSECT SPRAYS

Siberian Pine	DH-29
Cedar Balsam Pine	DH-33
Violet	DH-42
Spicy Mint	DH-50
New Mown Hay	DH-69
Spice	DH-74
Para Odor	DH-122
Jasmin Bouquet	DH-123
Cedar	DH-127
Cedar Wood	DH-132
English Lavender	DH-133
Lavender Bouquet	DH-150

Synfleur offers this comprehensive line of perfumes *especially* developed for aerosols. Synfleur's ability to create the finest perfumes for special applications dates back to 1889. For this reason you can be confident that the perfumes listed here are absolutely perfect for your aerosols. High ranking in consumer preferences, Synfleur perfumes are sales-winning fragrances. You can be sure that they will keep your product sold, too.

If you have a special problem, Synfleur's extensive facilities and technical skills are at your service. Conferences are strictly confidential. If you need additional information, write us. You can expect a quick reply to your inquiries.

Synfleur SCIENTIFIC LABORATORIES, INC.
MONTICELLO, N. Y.

ATLANTA • DETROIT • LOS ANGELES • NEW YORK • SAN FRANCISCO • MEXICO, D. F. • HAVANA • MONTREAL • Guatemala City • San Salvador • San Pedro Sula
Managua • San Jose • Panama • Barranquilla • Medellin • Bogota • Caracas • Maracaibo • Rio de Janeiro • Buenos Aires • Santiago

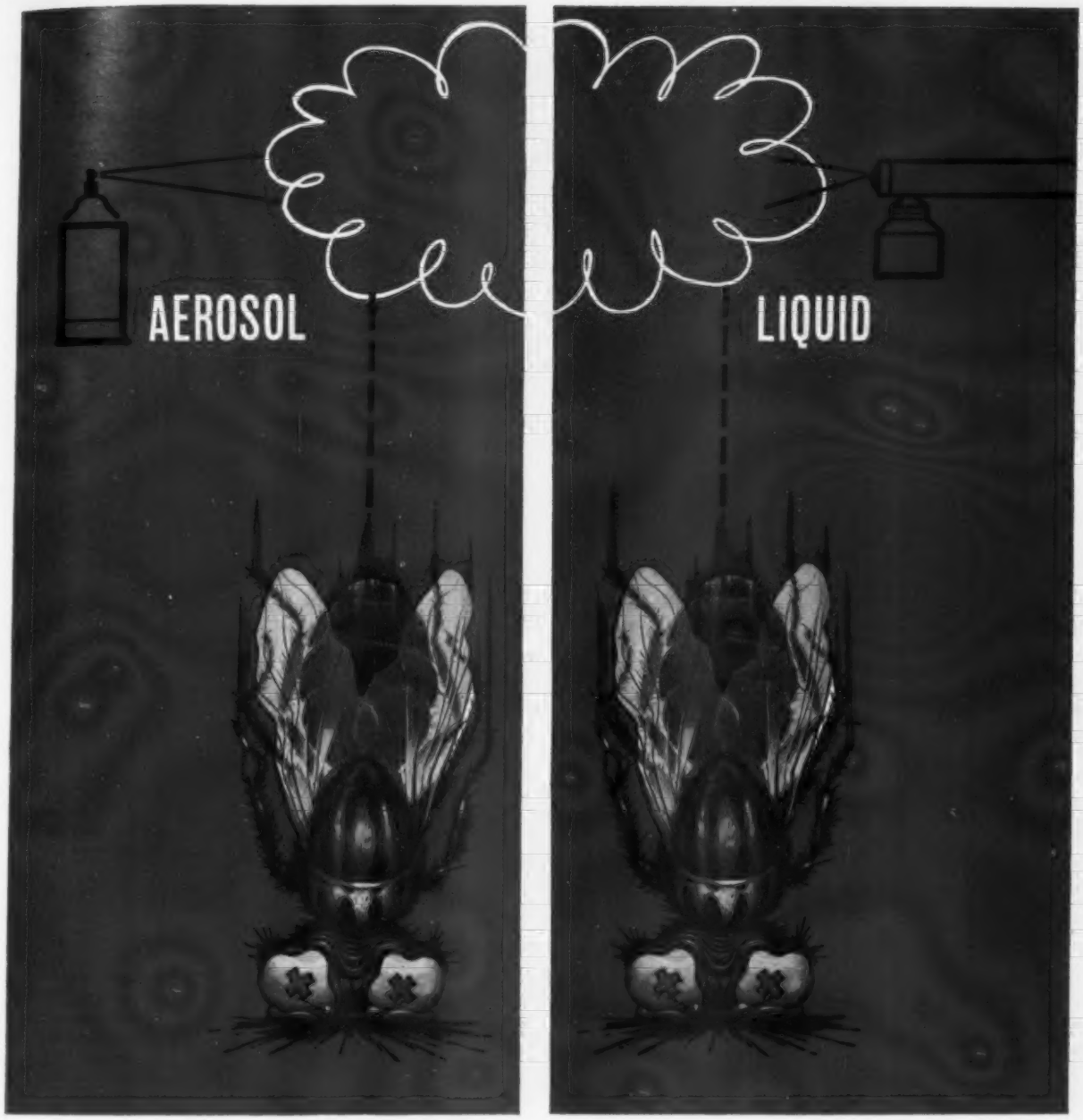
New York Sales Office: Telephone Plaza 7-1960

Ucon brand propellants put action in products

Why don't you discover Ucon Propellant service, too?

UNION CARBIDE CHEMICALS COMPANY
Division of Union Carbide Corporation
30 East 42nd Street, New York 17, N. Y.

Ucon and Union Carbide are registered trade marks of Union Carbide Corporation



Faster Knockdown with LETHANE 384

Aerosol or liquid . . . formulate with today's most economical and effective knockdown agent—LETHANE 384. Flies, mosquitoes and other insects are knocked down in a hurry by this proven chemical. Nothing else puts so much sales appeal into your formulations . . . at such low cost. Write for the complete story on LETHANE 384.

LETHANE is a trademark, Reg. U.S. Pat. Off. and in principal foreign countries.

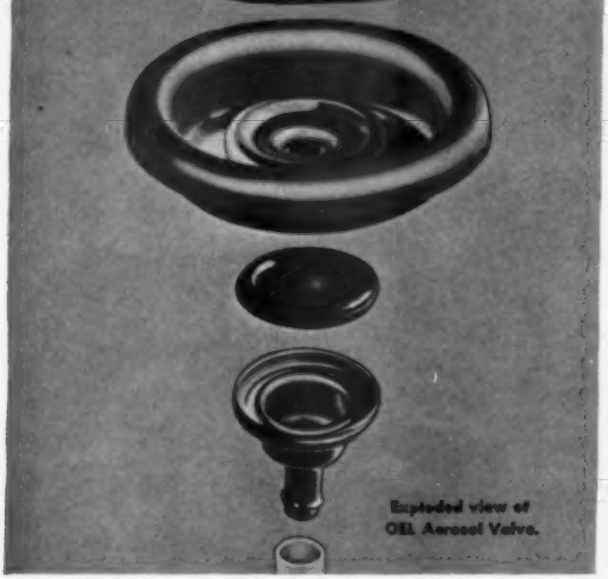
Chemicals for Industry

ROHM & HAAS COMPANY

WASHINGTON SQUARE, PHILADELPHIA 5, PA.

LETHANE 384

The amazing OEL 500 SERIES VALVE meets all dispensing requirements



Exploded view of OEL Aerosol Valve.

The mechanism of the versatile but simple OEL 500 Series Valve has only three basic parts (see exploded view). Used on many well-known spray and foam products, the unique rubber diaphragm of the valve assures accurate sealing, freedom from clogging, and positive action. Principal features are:

1. **At least 20% faster pressure filling.**
2. **Equally effective for cold or pressure filling.**
3. **Minimum propellent loss.**
4. **Uniform flow rates, due to "above-the-valve" control.**
5. **Safer filling inflammable materials.**
6. **Universal valve simplifies inventory control.**
7. **Excels for products pressurized with nitrogen.**

A few of the many dispensing variations possible are illustrated here.

Let us send you samples for testing with your product. Just specify container size and dispensing fitments desired.

OEL Incorporated

600 Pearl St., Elizabeth, N. J.

Originators of modern pressure filling techniques

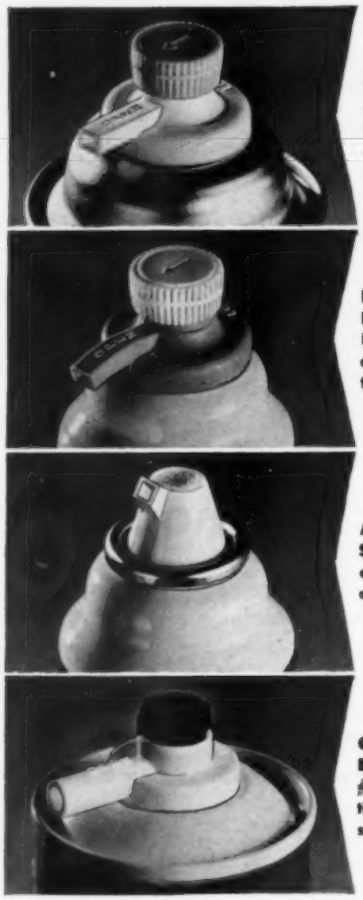
GLASS BOTTLE VALVES

MECHANICAL BREAK-UP SPRAY— The "500" Series newest, most exciting application.

STANDARD SPRAY in graceful actuator (can be two tone).

FOAM OR LIQUID SPOUT—can be completely enclosed under standard overcaps.

FOAMS AND LIQUIDS



TWIST LOCK TOP requires no overcap, locks closed for shipping, travel.

FOR FOOD... Twist Lock Top with "No Drool" secret, shields out atmosphere between use!

AIM-RIGHT FOAM SPOUT — stays oriented to dip tube inclination!

CAN-END VALVE ECONOMY— All OEL #500 Series Variations fit this money saving OEL exclusive.

And one shall be leader... Business leadership isn't an honorary degree — it's earned by doing a job better than anyone else!
Chase stands at its 29th year milestone, acknowledged leader in packaging for one reason: superior research on more difficult problems in more product classes.

PRODUCTION VERSATILITY — Our facilities will handle oil and water base, liquid and foam products, of all types in small or large quantities. No minimum run required and no maximum limit!

INCREASED PLANT FACILITIES — Our plant is centrally located for ideal distribution, with both rail and truck facilities. We offer warehousing, drop shipping in bulk lots, direct pick-up and routing by major national truck or rail lines.

Write or Phone: **CHASE PRODUCTS COMPANY** — Maywood, Illinois

Contract fillers of **AEROSOL** and **PRESSURIZED PRODUCTS**

AEROSOL *perfumes*

TESTED FOR EFFICIENCY

ESSENTIAL OILS
IMPORTED
AND
DOMESTIC

COMPOUNDS
FOR
CREAMS
AND
LOTIONS

REODORANTS
FOR
SOAPS, DETERGENTS
SPRAYS, Etc.

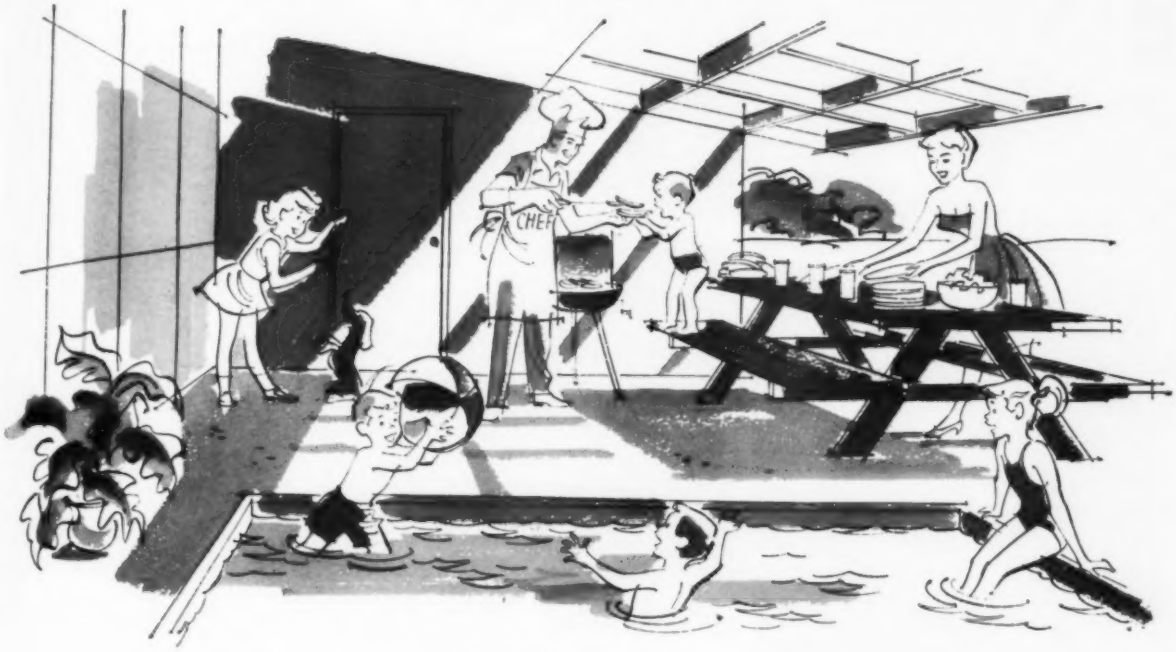
ROUBECHEZ, INC.

EIGHT EAST TWELFTH STREET • NEW YORK 3, N. Y.
TELEPHONE ALGONQUIN 5-7262

ROUBECHEZ-CHICAGO, INC. 701 SOUTH LA SALLE STREET • R. M. FERGUSON & CO, 4201 DUNDAS, TORONTO

"Kiddie-Kare"

(BUG PROOF THE YOUNGSTERS)



In these days of patios, pools and back yard barbecues there's plenty of opportunity for insects and kids to get together.

The personal repellents (both pressurized and liquid) made with MGK formulas not only do an excellent job of keeping mosquitoes, ticks, chiggers, flies, especially biting flies off adults, but they are perfectly safe to apply on children, whether they be tiny toddlers or tall teenagers.

*MGK formulas are available in ready-to-pack or in concentrate forms. Ready-to-pack formulas may be used as liquids or in pressurized sprays. With the concentrate, you mix your own solvents before packing.

MGK McLAUGHLIN GORMLEY KING Company

1715 S.E. Fifth Street / Minneapolis, Minnesota

McLAUGHLIN GORMLEY KING COMPANY
1715 S. E. Fifth Street, Minneapolis, Minnesota

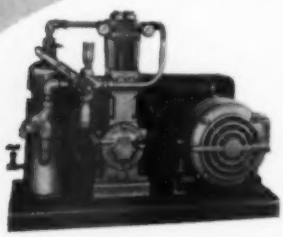
Gentlemen:
Please send information on the formulating, labeling, packaging, and marketing of personal repellents.

NAME _____

ADDRESS _____

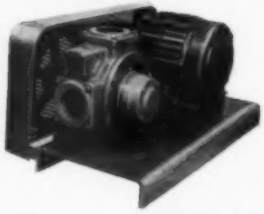
CITY _____ STATE _____

CORKEN PUMPS *handle* *Aerosol Propellants* BETTER!



MODEL 290-107

A CORKEN DRY-CYLINDER COMPRESSOR CAN'T CONTAMINATE YOUR PROPELLANT WITH OIL



MODEL 1021-103

A CORKEN CORO-VANE TRANSFERS LIQUIDS FAST

MODEL F10-101

A CORKEN CORO-FLO FILLS FAST, QUIETLY, EFFICIENTLY

TANK CARS AND TRANSPORTS ▶ For loading and unloading tank cars and transports, quickly and efficiently with complete recovery of vapor, there's the #290-107 "dry-cylinder" compressor. A tremendous first for Corken's — and you. It **can't** contaminate your product with oil. The crankcase is separate from the compressor-cylinder. Smooth running, and the one piece carbon piston rings assure top efficiency for years to come.

BULK PLANT TRANSFER ▶ For bulk plant transfer duty, the big #1021-103 or the smaller #521-103 Coro-Vanes perform quietly with surprising speed. They just can't be beat for performance and durability.

FILLING ▶ For filling purposes, there's the Coro-Flo series. The Coro-Flo is a turbine type pump with only one moving part — the impeller. It gets the job done quickly, efficiently and silently.

There's nothing else like a Corken, and never has been. No other pump at any price has so many features of practical value to the owner!

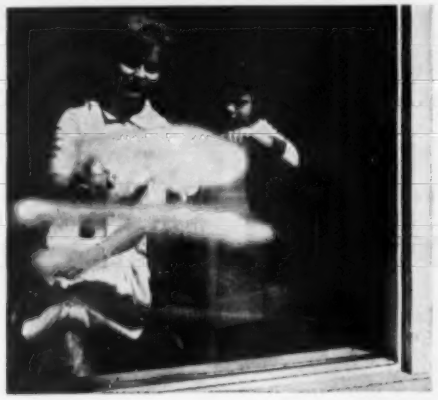
FOR COMPLETE INFORMATION, WRITE OR PHONE . . .

CORKEN'S INC.

P. O. BOX 1062 • PH. CE 5-5517
OKLAHOMA CITY, OKLA. U.S.A.

SILICONE NEWS from Dow Corning

Spray Way To Sales



For a prettier profit picture ... Dow Corning Silicones

To be sure your aerosol products sell and resell, formulate with Dow Corning Silicones. Because silicones — whether for cosmetic, polish, or industrial uses — provide the performance that pleases and brings customers back to buy again and again.

Take cosmetics. Silicones in the formulation mean creams and lotions that spread easily, work-in smoothly, "stay put". The skin never feels greasy; remains free to "breathe"; is effectively protected against waterborne irritants. Hair sprays impart lasting luster, greater manageability.

Or polishes for cars, furniture or glass. Silicone-based polishes mean almost no rubbing. A deeper, richer gloss is more easily attained and maintained. Greater resistance to oxidation is "built in" — Dow Corning Silicones give a polish job greater durability.

Industry, too, uses silicone aerosol products. Silicone release agents, for example, make plastic parts pop out of molds quickly, easily. Rejects, downtime and maintenance costs are slashed because silicones are heat-stable — won't melt or run off, won't form heavy carbonaceous build-up on the mold. Detail is perfect, close tolerances are held time after time.

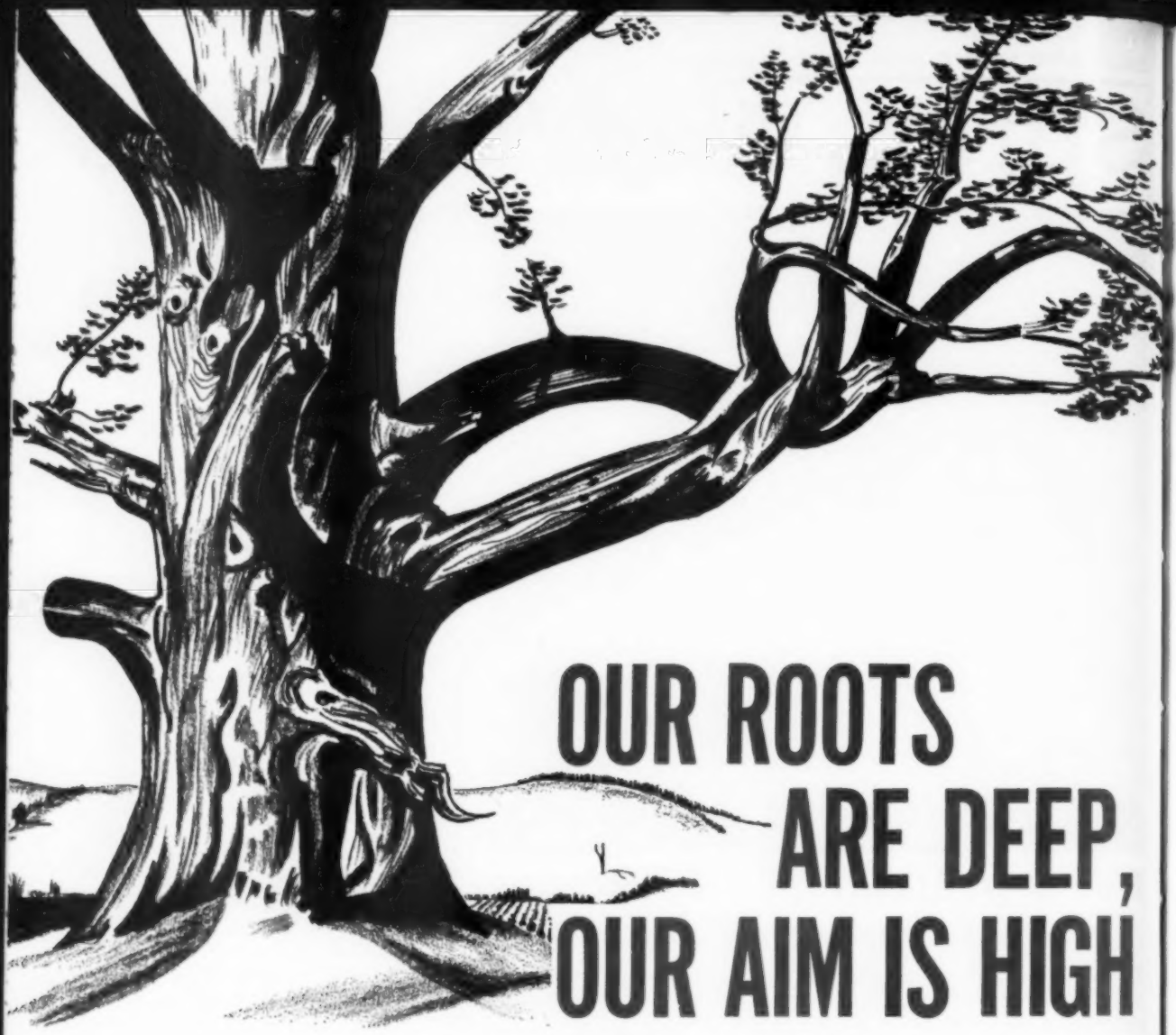
Whatever you formulate or package for private label, remember silicones make good products better ... improve profits by selling and reselling. And remember, too, that Dow Corning chemists are constantly working to develop new silicones and new aerosol formulations. Write today for the latest and most complete technical information—about silicones in cosmetics, polishes, specialties or in industrial products.

Learn how silicones can serve you — profitably. Write Dept. 0210.

first in silicones

Dow Corning CORPORATION
MIDLAND, MICHIGAN

ATLANTA BOSTON CHICAGO CLEVELAND DALLAS LOS ANGELES NEW YORK WASHINGTON, D. C.



OUR ROOTS ARE DEEP, OUR AIM IS HIGH

but Valves don't grow on trees

Some fifteen years ago, the aerosol industry was born. Shortly after, the Precision Valve Corporation began. As the industry grew, Precision did too, in research, in discovery, in development.

Today, with over 500 employees and more than 60,000 square feet of manufacturing space devoted to over 10,000 different combinations of specifications for aerosol valves, Precision works with the industry to create and develop new aerosol designs to improve current procedures.

Now, on the threshold of further expansion, Precision rededicates itself to serving the aerosol industry and its customers. A major portion of Precision's new plant program will be directed toward research and development; its modern production facilities further improved; its friendly hand extended and dedicated to helping everyone.

Yes, Precision's roots are deep . . . its aim high!

PRECISION VALVE CORPORATION • 700 NEPPERHAN AVENUE, YONKERS, N.Y.

AEROSOL BUYER'S GUIDE 1960-1961

How to use the Aerosol Buyer's Guide:

Where practicable, all components and services have been listed in alphabetical order, except in the case of various equipment categories, which appear under "Equipment."

The page numbers appearing after the company listings indicate advertisements (on other pages of the magazine) which will enable the reader to find further information about the product line or service offered by the listed firm.

Alphabetical Listing By Category

Anhydrous Alcohol 56
Antibiotics 57
Can Unscramblers 44
Capping Equipment 45
Cartoners and Carton Packers..... 45
Coding Devices 45
Compressors 46
Consultants and Research Agencies..... 36
Container Finishing and Decorating..... 39
Container Cleaners and Purgers..... 45
Containers, Aluminum 37
Containers, Glass 36
Containers, Jumbo-Size Metal..... 38
Containers, Pharmaceutical 38
Containers, Plastic 38
Containers, Plastic-Coated Glass..... 38
Containers, Screw-On Top 38
Containers, Specialty Metal..... 38
Cover Caps 39
Conveyors 46
Custom Fillers 40
Dip Tubing 44
Emulsifiers 44
Equipment 44
Filters 46
Filter Sheets 46
Flowed Gaskets 60
Gasser-Shaker 46
Glass Containers 36
Gibberellic Acid 51
Hair Spray Resins..... 51
Hot Water Test Tank..... 48
Ingredient Fillers 46
Insecticide Materials 52
Insect Repellents 52
Labelers 47
Laboratory Filling Equipment..... 48
Lanolin and Lanolin Derivatives..... 53
Leak Detecting Equipment..... 48
Mixing Equipment 47
Mixing Tanks 48
Nylon and Other Plastic Resins..... 53
Odor Neutralizers 53
Paint Resins 53
Perfuming and Odorizing Materials..... 53
Pharmaceutical Respirators 38
Plastic Containers 38
Plastic-Coated Glass Containers..... 38
Product Concentrate 55
Production Filling Lines 49
Propellants 55
Propellant Storage Systems..... 49
Propellant Storage Tanks..... 49
Pumps 49
Refrigeration Equipment 50
Shellac 56
Silicones 56
Trichlorethane 56
Valve Feeder and Inserter..... 50
Valves, Aerosol 57
Valves, Foam 58
Valves, Food 58
Valves, Glass and Plastic Bottle..... 58
Valves, Metered 59
Valves, Paint 59
Valves, One-Shot 59
Valves, Ultrafine Particle Size..... 60
Weighers and Classifiers..... 50

AEROSOL TRADE ASSOCIATIONS

Canadian Manufacturers of Chemical Specialties Association
3405 Cote des Neiges Road
Montreal 25, Que., Canada

Chemical Specialties Manufacturers Association
50 East 41st Street
New York 17, N. Y.
MUrray Hill 5-8722

See Page 118

European Federation of Aerosol Associations
2 Waisenhausstrasse
Zurich 1, Switzerland

French Aerosol Committee
c/o Parfumerie, Cosmetique, et Savons
28 Rue Saint Dominique
Paris 7, France

Interessen-Gemeinschaft Aerosole
c/o W. Staehle
J. G. Mouson & Co.
Mousonstrasse 9
Frankfurt/Main, Germany

International Aerosol Association
2 Waisenhausstrasse
Zurich 1, Switzerland

Packaging Institute
Aerosol Committee
342 Madison Avenue
New York 17, N. Y.

CAPS, See "Cover Caps"

CANS, See "Containers, Metal"

CONSULTANTS AND RESEARCH AGENCIES

Aeroprojects, Inc.
310 East Rosedale Street
West Chester, Pa.
OWen 6-4710
(Particle Size Analysis)

Aerosol Equipment Services
1017 Chevy Chase Drive
Anaheim, Calif.
PRospect 2-9197
(Aerosol Equipment Installation)

Battelle Memorial Institute
505 King Avenue
Columbus, Ohio
(Research)

Bio-Test Laboratories, Inc.
Northbrook, Ill.
(Toxicity, Irritation, and Sensitization Tests)

Crippen Laboratories, Inc.
1500 Guilford Avenue
Baltimore 2, Md.
VErnon 7-6650
(Product Development and Testing)

Evans Research and Development Corp.
250 East 43rd Street
New York 17, N. Y.
MUrray Hill 3-0071
(Product Development and Evaluation)

See Page 139

Florida Chemists & Engineers, Inc.
645 Rugby Avenue
Orlando, Fla.
GArden 5-1595
(Product Development, Line Installation)

Food & Drug Research Laboratories, Inc.
Maurice Avenue at 58th Street
Maspeth 58, N. Y.
TWining 4-0800
(Toxicological and Inhalation Studies)

Robert A. Foresman, Jr., Aerosol Consultant
1690 Margaret Street
Philadelphia 24, Pa.
PIoneer 3-0596
(Development, Formulation, Testing, Plant Layout, Customer Service)

See Page 138

Walter Frank Organization
4100 Warren Avenue
Hillside, Ill.
LInden 4-6600
(Packaging Components)

See Page 117

Al Gaines
5100 Mulford Street
Skokie, Ill.
(Production, plant layout)

Harris Laboratories, Inc.
816 "P" Street
Lincoln 8, Neb.
(Toxicological Studies, Analyses)

Hazleton Laboratories
Falls Church, Va.
(Inhalation Studies, Toxicity Tests, Etc.)

Hill Top Research Institute, Inc.
Miamiville, Ohio
TErrace 1-3114
(Toxicity, Irritation, and Sensitization Tests)

Hudson Laboratories, Inc.
117 W. 13th Street
New York 11, N. Y.
ALgonquin 5-6290
(Toxicology, Dermatology, Etc.)

Insect Control & Research, Inc.
1115 Rolling Road
Baltimore 28, Md.
(Insecticide Performance Testing)

W. Alec Jordan Associates
290 Park Avenue
New York 17, N. Y.
(Product Market Studies)

Kurek Engineering
5201-B University Avenue
Madison 5, Wis.
CEdar 3-3771
(Selection and Modification of Production Equipment)

Leberco Laboratories
123 Hawthorne Street
Roselle Park, N. J.
CHestnut 5-1933
(Product Toxicity and Irritation Studies)

Arthur D. Little, Inc.
30 Memorial Drive
Cambridge 42, Mass.
(Research)

Lodes Aerosol Consultants
730 Fifth Avenue
New York 19, N. Y.
CIrcle 7-3170
(Product Development, Research, Plant Layout)

Metico, Inc.
347 Fifth Avenue
New York 16, N. Y.
MUrray Hill 3-2850
(Plant Layout and Equipment)

New Drug Institute, Inc.
660 Madison Avenue
New York 21, N. Y.
MUrray Hill 8-6040
(Toxicity Studies, Pharmaceutical Screening)

Pegasus International Corp.
1 East 53rd Street
New York 22, N. Y.
PLaza 8-2790
(Overseas Representation)

Pressurized Packaging Consultants Ltd.
Ashbourne House
Alberon Gardens
London N.W. 11, England

Product Development Associates
P. O. Box 146
Jackson Heights 72, N. Y.
HAvermeyer 9-1421
(Valve and Dispenser Design)

Reed Research Corp
Mill Street
Shelton, Conn.
REgent 5-4858
(Research, Testing, Product Development)

Rosner-Hixson Laboratories
7737 South Chicago Avenue
Chicago 19, Ill.
REgent 4-0142
(Toxicity Testing, Irritation Studies)

Herbert V. Shuster, Inc.
655 Boyleston Street
Boston 16, Mass.
COmmonwealth 6-5520
(Food Toxicity and Testing)

Foster D. Snell, Inc.
29 West 15th Street
New York 11, N. Y.
WAtkins 4-8800
(Research, Testing, Formulation)

United States Testing Co.
1415 Park Avenue
Hoboken, N. J.
SWarthmore 2-2400
(Research, Testing, Toxicology)

Wisconsin Alumni Research Foundation
P. O. Box 2217-DD
Madison 1, Wisconsin
(Formulation, Labeling, Toxicity Testing)

CONTAINERS
(Aluminum)

Aluminum Co. of America
Alcoa Building
Pittsburgh 19, Pa.

Bradley-Sun Division
American Can Co.
181 Long Avenue
Hillside, N. J.
WAverly 3-0400

Continental Can Co.
100 E. 42nd Street
New York 14, N. Y.
OXford 7-1200

See Page 10

Emson Research, Inc.
118 Burr Court
Bridgeport 5, Conn.
EDison 6-2553

See Page 15

General Impact Extrusions Ltd.
191 Evans Avenue
Toronto 18, Ont., Canada
CLifford 5-4489

Hampton Products Co.
Hester Street
Portland, Pa.
TWin Oaks 7-6103

Impact Container Corp.
P. O. Box 907
Buffalo 9, N. Y.
Regent 7326
(Agents for Bombrini-Parodi Delfino)

Metal Fabrications, Inc.
203 Cherry Street
Waterbury 20, Conn.

Modern Containers, Ltd.
1190 Birchmont Road
Scarboro, Ont., Canada
PL 5-5236

Peerless Tube Corp.
58 Locust Avenue
Bloomfield, N. J.
PIlgrim 3-5100

See Page 81

Pegasus International Corp.
1 East 53rd Street
New York 22, N. Y.
PLaza 8-2790
(Agents for Pautry Aluminum, Bellegarde, Ain, France)

Risdon Manufacturing Co.
Box 520
Naugatuck, Conn.
PArk 9-8231

United States Can Co.
Subsidiary, Victor Metal Products Co.
Highway 67-N.
Newport, Ark.

See Page 108

White Metal Mfg. Co.
1012 Grand Street
Hoboken, N. J.
OLdfield 9-2043

A. H. Wirz, Inc.
2292 W. Townsend Street
Chester, Pa.

CONTAINERS
(Glass)

Brockway Glass Co., Inc.
Brockway, Pa.
BRockway 3015

Foster-Forbes Glass Co.
E. Charles Street
Marion, Ind.

Hazel Atlas Glass
Div. of Continental Can Co.
Wheeling, W. Va.

Maryland Glass Co.
2147-53 Wicomico Street
Baltimore 20, Md.

Narva Products Corp.
201 Verona Avenue
Newark, N. J.

See Page 112

Owens-Illinois Glass Co.
P. O. Box 1035
Toledo, Ohio
CHerry 2-6543

See Page 84

Richford Corporation
3618 Oceanside Road
Oceanside, N. Y.
ROckville Centre 6-2366

See Page 123

Wheaton Glass Co.
Millville, N. J.
TAylor 5-1400

See Page 60A

CONTAINERS
(Jumbo-Size Metal)

Impact Container Corp.
P. O. Box 907
Buffalo 9, N. Y.
Regent 7326
(Agents for Bombrini-Parodi Delfino)

Tube Manifold Corp.
419 Bryant Street
North Tonawanda, N. Y.
LUdlow 7900

See Page 134

CONTAINERS
(Pharmaceutical Respirators)

Thomas J. Mahon, Inc.
75 Brayton Street
Englewood, N. J.
LOwell 7-3900

CONTAINERS
(Plastic)

Apcon Co.
25th and King's Highway
Independence, Mo.
CLifton 4-6000

Bernardin Bottle Cap Co.
2201 W. Maryland Street
Evansville, Ind.

Colt's Plastic Co.
Putnam, Conn.
WAlnut 3-9514

Imco Container Corp
75th & Cleveland Streets
Kansas City, Mo.

National Plastic Products Co.
Odenton, Md.
SOuthfield 6-1000

Owens-Illinois Glass Co.
P. O. Box 1035
Toledo, O.
CHerry 2-6543

See Page 84

Precision Valve Corp.
700 Nepperhan Avenue
Yonkers 3, N. Y.
YOnkers 9-6500

See Page 34

Pyro Plastics Corp.
690 Chestnut Street
Union, N. J.

Richford Corp.
5618 Oceanside Road
Oceanside, N. Y.
ROckville Centre 6-2366

See Page 123

Richmond Plastics Ltd.
Richmond, Que., Canada

Union Carbide Plastics Co. Division
Union Carbide Corp.
270 Park Avenue
New York 17, N. Y.

United Plastic Industries
1300 Water Street
Vassar, Mich.
VAssar 2431

Wheaton Plastics Co.
Mays Landing, N. J.
MA 5-4811

See Page 60A

Wilmington Plastics Co.
810 S. Heald Street
Wilmington, Del.
OLympic 8-6401

A. H. Wirz Co. Inc.
Fourth and Townsend Streets
Chester, Pa.
CHester 3-6281

CONTAINERS
(Plastic-Coated Glass)

Owens-Illinois Glass Co.
P. O. Box 1035
Toledo, O.
CHerry 2-6543

See Page 84

Wheaton Plasti-Cote Co.
Millville, N. J.
TAylor 5-1400

See Page 60A

CONTAINERS
(Screw-on Top)

Builders Sheet Metal Works, Inc.
108 Wooster Street
New York 12, N. Y.
CAnal 6-5390

See Page 129

CONTAINERS
(Specialty Metal)

Bridgeport Metal Goods Manufacturing Co.
365 Cherry Street
Bridgeport 5, Conn.
FOrest 6-4701

See Page 135

Emson Research, Inc.
118 Burr Court
Bridgeport 5, Conn.
EDison 6-2553

See Page 15

Metal Fabrications, Inc.
203 Cherry Street
Waterbury 20, Conn.

Risdon Manufacturing Co.
Naugatuck, Conn.
PArk 9-8231

Tubing Seal Cap, Inc.
808 West Santa Anita Street
San Gabriel, Calif.

CONTAINERS
(Tin and Black Plate)

American Can Co.
100 Park Avenue
New York, N. Y.
MUrray Hill 6-4900

See Pages 62, 63

Continental Can Co.
100 East 42nd Street
New York 14, N. Y.
OXford 7-1200

See Page 10

Crown Cork & Seal Co., Inc.
Can Division
9300 Ashton Road
Philadelphia 36, Pa.
ORchard 3-5100

See Page 14

J. A. Schmalbach
Braunschweig, Germany

CONTAINER FINISHING AND DECORATING

Bridgeport Metal Goods Mfg. Co.
365 Cherry Street
Bridgeport 5, Conn.
FOrest 6-4701

See Page 135

Britel Products, Inc.
102 Straight Street
Paterson, N. J.
ARmory 4-5767

Eyelet Specialty Division
International Silver Co.
P.O. Box 179
Wallingford, Conn.
COlony 9-1407

Metal Fabrications, Inc.
203 Cherry Street
Waterbury 20, Conn.

Monroe-Danford & Co.
50 48th Street
Weehawken, N. J.
UNion 6-1277

Plastic Art Metallizing Corp.
68-70 Freeman Street
Brooklyn 22, N. Y.
EVergreen 3-7171

CONTAINER RAW MATERIALS
(See "Nylon and Other Resins")

COVER CAPS AND CLOSURES

Aerated Container Corp.
Dairy Whipt Division
39 S. LaSalle Street
Chicago, Ill.
CEntral 6-7460

See Page 91

Armstrong Cork Co.
5403 Cornell Avenue
Lancaster, Pa.
Express 7-5151

Bristol Flowed Gasket Co.
P. O. Box 382
Southington, Conn.

Britel Products, Inc.
102 Straight Street
Paterson, N. J.
Armory 4-5767

J. L. Clark Manufacturing Co.
2300 Sixth Street
Rockford, Ill.

Clayton Corp.
4205 Forest Park Boulevard
St. Louis 8, Mo.
JEfferson 5-6226

See Page 77

Clinton Valves, Inc.
35135 Groesbeck Highway
Mt. Clemens, Mich.

Colt's Plastic Co.
Putnam, Conn.
WAlnut 3-9514

Eastern Cap & Closure Co.
725 N. Haven Street
Baltimore 5, Md.
EAstern 7-5640

See Page 132

Eyelet Specialty Division
International Silver Co.
P.O. Box 179
Wallingford, Conn.
COlony 9-1407

Gilbert Plastics, Inc.
Boright Avenue
Kenilworth, N. J.

Ludwig Closures
185 Oakland Street
Brooklyn 22, N. Y.
EVergreen 3-2197

Mack Molding Co.
Wayne, N. J.
MOuntain View 8-0800

Metal Fabrications, Inc.
203 Cherry Street
Waterbury 20, Conn.

Monroe-Danford & Co.
50 48th Street
Weehawken, N. J.
UNion 6-1277

Owens-Illinois Glass Co.
P. O. Box 1035
Toledo, O.
CHerry 2-6543

See Page 84

Penn Cork & Closures, Inc.
115 Manhattan Avenue
Brooklyn 22, N. Y.
EVergreen 9-4416

See Page 126

Pharma Plastics, Inc.
205 S. Smallwood Street
Baltimore 23, Md.
GIlmore 5-7311

See Page 128

Precision Valve Corp.
700 Nepperhan Avenue
Yonkers 3, N. Y.
YOnkers 9-6500

See Page 34

Pres-Pak Valve Corp.
2060 Happy Lane
St. Louis 25, Mo.
TWinbrook 2-1135

Risdon Manufacturing Co.
Box 520
Naugatuck, Conn.
PArk 9-8231

Scott Plastics
410 Windsor Street
Hartford 5, Conn.

Scovill Manufacturing Co.
99 Mill Street
Waterbury 20, Conn.

Spra-Lok Corp.
Subsidiary of Dupli-Color Products Co.
2440 S. Michigan Avenue
Chicago 16, Ill.
CAlument 5-3734

Sterling Seal Co.
316 West 16th Street
Erie, Pa.
ERie 4-1568

Super Whip Valve Co.
4101 N. Rockwell
Chicago 18, Ill.

See Page 121

Sunbeam Plastics Corp.
P. O. Box 4038, Station A
Evansville, Ind.
HArrison 3-6201

Tubing Seal Cap, Inc.
808 West Santa Anita Street
San Gabriel, Calif.

Valve Corp. of America
1720 Fairfield Avenue
Bridgeport, Conn.
EDison 3-3165

See 4th Cover

Walter Frank Organization
4100 Warren Avenue
Hillside, Ill.
LInden 4-6600

See Page 117

West Penn Mfg. & Supply Corp.
809 Second Avenue
Brackenridge, Pa.
ACademy 4-5252

See Page 98

Wheaton Plastics Co.
Mays Landing, N. J.
MA 5-4811

See Page 60A

Wheeling Stamping Co.
2116 Water Street
Wheeling, W. Va.
CEdar 3-4770

Wilmington Plastics Co.
810 S. Heald Street
Wilmington, Del.
OLympic 8-6401

A. H. Wirz, Inc.
Fourth & Townsend Streets
Chester, Pa.
CHester 3-6281

COVER CAP TAMPERPROOF SEAL

E. I. du Pont de Nemours & Co.
"Cel-O-Seal" Division
River Road
Buffalo 7, N. Y.

See Page 23

CUSTOM FILLERS

(These companies fill for the trade — many supply filled aerosol products for private labels)

Acrolite Products, Inc.
810 Martin Street
Rahway, N. J.
FUlton 1-4600

AeriForm Products Co.
23400 Park Street
Dearborn, Mich.
LOgan 3-2102

Aerocide Dispensers Ltd.
P. O. Box 9—Weston
Toronto 15, Ont., Canada
CHerry 4-1101

Aeropak, Inc.
5000 W. 41st Street
Chicago 50, Ill.
LAfayette 3-5600

Aeropak of New Jersey, Inc.
548 Belleville Turnpike
Kearney, N. J.
Wyman 8-8500

Aerosol Bug Blitzer Co.
10 Dell Park Avenue
Toronto, Ont., Canada

Aerosol Corp. of the South
P. O. Box 148
Arlington, Tenn.
UNiversity 7-2254

See Page 144

Aerosol Custom Pharmaceutical, Ltd.
42 Milford Avenue
Toronto 15, Canada
CH 4-1947

Aerosol Methods
Ridge Road
Tylersport, Pa.
ALpine 7-6032

Aerosol of Georgia, Inc.
4113 Peachtree Road NE
Atlanta 19, Ga.
CEdar 7-0077

Aerosol Packaging of Canada, Ltd.
18 Civic Road
Scarborough, Ont., Canada
PLymouth 5-2711

Aerosol Techniques, Inc.
1730 State Street
Bridgeport, Conn.
EDison 6-0176

See Page 97

Airosol Co., Inc.
525 N. 11th Street
Neodesha, Kans.
Neodesha 149

American Aerosol Corp.
889 Gordon Street
Holland, Mich.
EXport 2-3025

AMR Chemicals Co., Inc.
985 East 35th Street
Brooklyn, N. Y.
CLoverdale 3-8300

Arlenge Laboratories
34 Hubert Street
New York 13, N. Y.
BEekman 3-6818

Armstrong Laboratories
421 LaGrange Street
W. Roxbury, Mass.
FAirview 3-7404

See Page 142

Associated Brands, Inc.
50 Wallabout Street
Brooklyn, N. Y.
ULster 5-2900

See Page 141

Astoria Manufacturing Co.
42-02 Vernon Boulevard
Long Island City, N. Y.

Atlantic Laboratories of Delaware
P. O. Box 1644
Wilmington 99, Del.
SYcamore 8-8749

Automatic Filling Corp.
1213 No. Highland Avenue
Los Angeles 38, Calif.
HOllywood 9-7284

G. Barr & Co.
3601 S. Racine Avenue
Chicago, Ill.
YArds 7-1700

See Page 103

Capitol Packaging
1501 N. 31st Street
Melrose Park, Ill.
COlumbus 1-6295

Cardel Enterprises
Bethridge Rd. Rexdale
Toronto, Canada
CHerry 4-1123

Chase Products Co.
Gardener Road
Broadview, Ill.
FIllmore 5-1222

See Page 29

Chemical Specialties Corp.
1007 West Maryland
Evansville 10, Ind.
HArrison 5-1101
(high-pressure only)

ChemSpray Corp.
6727 Cadillac Street
Houston 21, Tex.
RIverside 7-9461

Cincinnati Aerosol Corp.
125 Terrace Drive
Cincinnati 15, Ohio

Claire Manufacturing Co.
7642 Vincennes Avenue
Chicago 20, Ill.
ABerdeen 4-6400

See Page 144

Claire Manufacturing Co.
1200 N.W. 23rd Avenue
Ft. Lauderdale, Fla.
LUdlow 3-7440

See Page 144

Cleveland Aerosol Packaging
9801 Harvard Avenue
Cleveland, O.
VUlcan 3-4800

See Page 143

Connecticut Chemicals (Canada) Ltd.
Curity Avenue & Hellinger Road
Toronto, Ont., Canada
PLymouth 5-5249

Consolidated Aerosols Corp.
1325 Second Avenue
New Hyde Park, L. I., N. Y.
HUnter 8-2330

See Page 141

Continental Filling Corp.
123 Hazel Street
Danville, Ill.
HIckory 6-7640

See Page 4

Continental Filling Corp.
Hobart, Ind.

See Page 4

Cunningham Distributors
122 Cuthbert Street
Philadelphia, Pa.

Diamond Chemical Co.
Glen Gardiner, N. J.
CAlifon 188

Diamond Chemical Co.
630 Dorchester Street West
Montreal, Quebec, Canada
UNiversity 6-2104

Dupli-Color Products Co.
2440 South Michigan Avenue
Chicago 16, Ill.
Calumet 5-3734

Empress Cosmetics, Inc.
4747 Bronx Boulevard
Bronx 70, N. Y.
FA. 5-9400

Embassy Laboratories
5210 37th Street
Long Island City 1, N. Y.

Eska Chemical Corp.
352 Livonia Avenue
Brooklyn, N. Y.
DIckens 2-5205

See Page 142

Eveready Pressurized Prod., Inc.
1022 Belt Line Avenue
Cleveland, O.
SHadyside 1-1388

See Page 143

Fluid Chemical Co., Inc.
878 Mt. Prospect Avenue
Newark, N. J.
HUmboldt 4-1000

See Page 142

Fuld Bros., Inc.
702 South Wolfe Street
Baltimore 31, Md.
BRoadway 6-7400

Gabriel Manufacturing Co.
Maple Avenue
Haverstraw, N. Y.
HAverstraw 9-3236

Gard Industries, Inc.
1739 Harding Road
Northfield, Ill.
Wilmette 7007

See Page 144

Gebauer Chemical Co.
9408-10 St. Catherine Avenue
Cleveland, O.
BRoadway 1-5252

Grestco Dyes & Chemicals, Inc.
153 Classon Avenue
Brooklyn 5, N. Y.
MAin 2-6357

See Page 141

Haas Chemical Corp.
Aerosol Packaging Division
W. Linden and N. 8th Avenue
Scranton 3, Pa.
DIamond 4-2064

Hampton Products
Hester Street
Portland, Pa.
TWin Oaks 7-6103

Hysan Products Co.
919 West 38th Street
Chicago, Ill.
FRontier 6-8900

IKI Manufacturing Co.
107 Maple Court
Edgerton, Wisc.
Edgerton 144

See Page 143

Illinois Bronze Powder Co.
2023 S. Clark Street
Chicago 16, Ill.
VI 2-0660

See Page 143

Impact Container Corp.
P. O. Box 907
Buffalo 9, N. Y.
REgent 7326

Inland Paint & Chem. Co.
2144 West 49th Street
Chicago, Ill.
VIrginia 7-7511

Jet-Air Inc.
22 E. 22nd Street
Paterson 4, N. J.

Kan-Jax Chem. Co.
2500 Summit Avenue
Kansas City, Mo.

Kaysing Korp.
8005 Alabama
St. Louis 11, Mo.

See Page 144

Kent Industries
2641 Joy Road
Detroit 6, Mich.

Kerr Chemicals, Inc.
P. O. Box 189
Des Plaines, Ill.
VAnderbilt 7-4477

Kerr Chemicals, Inc.
Redwood City, Calif.

LaMaur, Inc.
110 N. Fifth Street
Minneapolis, Minn.
FEderal 8-4771

Larson Laboratories
1320 Irwin Avenue
Erie, Pa.

Lawson Chemical Products Co.
1700 South Broadway
Gardena, Calif.
FAculty 1-4220

Lenk Manufacturing Co.
Claire Street
Franklin, Ky.
JUstice 6-3231

Marcy Laboratories, Inc.
2161 N. California Avenue
Chicago 47, Ill.
SPaulding 2-3900

See Page 143

Maru Chemical Co.
Stratford, Conn.

McGuire & Co.
833 47th Avenue
Oakland, Calif.

Miller Chemical Corp.
Spra-Pak Division
Charles Town, West Va.

Miller Products Co.
7737 N.E. Killingsworth
Portland 1, Ore.

Midwest Aerosols
7644 S. Vincennes Avenue
Chicago 20, Ill.
ABerdeen 4-6400

Midwest Consultants, Inc.
3500 DeKalb Street
St. Louis 18, Mo.
PRospect 1-5750

Mohawk Brush Co.
Aerosol Filling Division
Fuller Road
Albany, N. Y.

Mohawk Furniture Finishing Products, Inc.
175 West Main Street
Amsterdam, N. Y.
VIctor 3-1380

See Page 136

Morton Pharmaceuticals
1625 N. Highland
Memphis 8, Tenn.
FAirfax 7-5631

National Chemical Laboratories, Inc.
420 Monceaux Road
West Palm Beach, Fla.

National Spray Can Filling Corp.
6202 Avenue U
Brooklyn, N. Y.
CLoverdale 1-3350

See Page 140

New England Pharmaceutical
2013 Outer Drive
Dearborn, Mich.

Old Empire, Inc.
Mt. Prospect & Verona Ave.
Newark, N. J.
HUmboldt 4-2121

See Page 137

Pace, Inc.
P. O. Box 206
Wilmington 99, Del.
EAst 8-4151

See Page 131

Panpack, Inc., Aerosol Division
Strong, Cobb & Arner, Inc.
High Street
Attica, N. Y.
ATtica 898

Par Industries, Inc.
2193 East 14th Street
Los Angeles 21, Calif.
TRinity 2668

See Page 122

Pennsylvania Engineering Co.
1107-21 N. Howard Street
Philadelphia 23, Pa.
MArket 7-3635

Peterson Filling & Packaging Co.
Hegeler Lane
Danville, Ill.
DAnville 1400
HIckory 2-1400

See 3rd Cover

Plaze, Inc.
9401 Watson Industrial Park
St. Louis, Mo.
WOodland 1-3564

PowrPak-ConnChem Inc.
145 Howard Aveune
Bridgeport, Conn.
FOrest 7-6495

See Page 142

Prepo Corp.
Edgerton, Wis.

See Page 144

Pressure Products Co.
Box 342
West Chester, Pa.
OWen 6-3363

Products Packaging Inc.
Box 1076, Station A
Cleveland 2, O.
WOodbine 1-8800

Professional Products Laboratories
1300 N. Fulton Street
Baltimore 17, Md.

Protection Chemical Products Co.
5747 Souligny Street
Montreal 5, Canada

Puritan Aerosol Corp.
160 Washington Street N.
Boston, Mass.
RIchmond 2-3318

See Page 141

Ralm Products, Inc.
206 S. Larkin Avenue
Joliet, Ill.
SA 5-1663

Rand Chemical Products Co.
2626 S. Dearborn Street
Chicago, Ill.
CAlumet 5-2866

W. T. Rawleigh Co.
101 S. Liberty Avenue
Freeport, Ill.

Red Devil Chemicals Inc.
30 North West Street
Mount Vernon, N. Y.
MOunt Vernon 4-9880
(Paints and related products)

Reed Research Co.
Aerosol Filling Division
Mill Street
Shelton, Conn.
REgent 5-4858

Regal Chemical Corp.
115 Dobbin Street
Brooklyn 22, N. Y.
EVergreen 9-8727

Rex Research Corp.
600 Montrose Avenue
Toledo 7, O.
JEfferson 6-4633

Ronor Corp.
Div. of Engine Parts Mfg. Co.
1360 West 9th Street
Cleveland, O.
MAin 1-5294

Rose Manufacturing Co.
200 Water Street
Poughkeepsie, N. Y.

Gene Rose Co., Inc.
1637 S. Kilbourn Avenue
Chicago, Ill.
LAwndale 1-7000

See Page 150

Rudd Paint & Varnish Co.
1608 15th Avenue West
Seattle 99, Wash.
ATwater 3-1900

S&W Aerosol Corp.
10930 Elliott Avenue
El Monte, Calif.
CUmberland 3-2675

Schaefer Paint Co.
334 Marion Street
Lancaster, Pa.

707 Co.
1530 Stillwell Avenue
New York 61, N. Y.

Shield Chemical Co.
50 Brook Road
Needham Heights, Mass.
HIllcrest 4-6120

Skandinaviska Aerosol Aktiebolag
19 Virebergsvagen
Stockholm-Solna, Sweden

See Page 148

Southeastern Packaging Co.
P. O. Box 8057
Madiera Beach
St. Petersburg, Fla.

Spray Mist Inc.
952 Utica Avenue
Brooklyn 3, N. Y.

Spruhtechnik GMBH
Rheinfelden/Baden, Germany

See Page 149

SpraPak Chemical Co.
260 Meserole Street
Brooklyn 6, N. Y.

Sprayon Products Co.
2075 East 65th Street
Cleveland, O.
HEnderson 2-2900

See Page 145

Sprayway, Inc.
7644 Vincennes Avenue
Chicago 20, Ill.
STewart 3-5441

Stalfort Pressure-Pak Corp.
321 W. Pratt St.
Baltimore 1, Md.
SAratoga 7-4760

See Second Cover

Stanley Home Products Co.
National Contracts Division
116 Pleasant Street
Easthampton, Mass.
EAsthampton 1000

Stewart-Hall Chemical Co.
17 Northwest Street
Mount Vernon, N. Y.

Strobel Products, Inc.
2609 Congress St.
Louisville, Ky.
SPring 2-2705

Strouse, Inc.
Main & Astor Streets
Norristown, Pa.
BRoadway 2-2211

John Struthers & Co. Ltd.
5581 Pare Street
Montreal, Canada
RIverside 8-9623

See Page 144

Sun Lac Inc.
274 Lafayette Street
Newark 5, N. J.
MArket 3-7727

See Page 142

S & W Manufacturing Chemists
P. O. Box 274
Gainesville, Fla.
FRanklin 2-2138

Texas Aerosols, Inc.
201 Velasco Street
Houston 3, Tex.

Thomasson of Pa., Inc.
Washington & Ford Streets
Norristown, Pa.
BRoadway 9-7880

See Page 144

Tops Products Co. Division
Twentieth Century Cosmetics
203 E. 12th Street
New York 3, N. Y.

United States Aerosol Specialties Corp.
300 Decatur Street
New Orleans 12, La.
EXpress 4004

Van Pell Chemical & Supply Corp.
48 East First Street
New York 3, N. Y.

Virginia Smelting Co.
West Norfolk, Va.

Vixen Chemical Corp
201 Verona Avenue
Newark 4, N. J.

West Coast Aerosol Products Inc.
208-02 48th Avenue
Bayside, L. I., N. Y.
BAyside 5-1681

Western Filling Corp.
6423 Bandini Boulevard
Los Angeles 23, Calif.
RAymond 3-9177

See Page 142

Whitmire Research Labs., Inc.
339 S. Vanderventer Street
St. Louis 10, Mo.

Wyatt Products, Inc.
685 Metal Road, N.E.
Atlanta 9, Ga.
TRinity 5-8881

See Page 144

Zenith Chemical Corp.
175 Mt. Pleasant Avenue
Newark, N. J.
HUmboldt 2-1800

DIP TUBING

Action Plastics Inc.
Affiliate of Colorite Plastics of N. J.
50 California Avenue
Paterson, N. J.
ARmory 8-2600

See Page 119

Anesite Co.
3575 Touhy Avenue
Skokie, Ill.

Anchor Plastics
36-36 36th Street
Long Island City, N. Y.
RAvenswood 9-1494

See Page 139

Walter Frank Organization
4100 Warren Avenue
Hillside, Ill.
LInden 4-6600

See Page 117

Hydrawlik Co.
131 East First Avenue
Roselle, N. J.
CHestnut 5-0368

Jordan Manufacturing Co.
Des Plaines, Ill.
VAnderbilt 4-4121

Plastic Extruded Products Co.
308 Port Avenue
Elizabeth 1, N. J.
ELizabeth 4-2300

United States Gasket Co. Division
The Garlock Packing Co.
Camden 1, N. J.

EMULSIFIERS

American Cholesterol Products Inc.
Amerchol Park
Edison, N. J.
LIberty 8-6600

See Page 8

Antara Chemicals Division
General Aniline & Film Corp.
435 Hudson Street
New York 14, N. Y.
WAtkins 4-0600

Atlas Powder Co.
Chemicals Division
Wilmington 99, Del.
OLympia 8-6511

Commercial Solvents Corp.
260 Madison Avenue
New York 16, N. Y.

Kessler Chemical Co.
State Road and Cottman Avenue
Philadelphia 35, Pa.
DE 2-26565

Knapp Products, Inc.
178 Hamilton Avenue
Lodi, N. J.
PRescott 9-6945

Nopco Chemical Co.
60 Park Pl.
Newark, N. J.

Rohm & Haas Co.
Agricultural Chemicals Dept.
Washington Square
Philadelphia 5, Pa.

See Page 27

Sole Chemical Corp.
7740 South Chicago Avenue
Chicago 19, Ill.

Stepan Chemical Co.
427 W. Randolph Street
Chicago 6, Ill.

Witco Chemical Co.
122 E. 42nd Street
New York 17, N. Y.
MUrray Hill 7-7979

EQUIPMENT

Can Unscramblers

Chisholm-Ryder Co. of Pennsylvania
Blettner Avenue
Hanover, Pa.
MElrose 7-2123

See Page 128

Arthur Colton Co. Division
Snyder Corp.
3598 E. Lafayette
Detroit 7, Mich.

Dudley Machinery Corp.
P. O. Box 143
Santa Clara, Calif.

Food Machinery & Chemical Corp.
342 W. Julian Street
San Jose 6, Calif.
CYpress 4-8124

Horix Manufacturing Co.
2601 Chartiers Avenue
Pittsburgh 4, Pa.
FEderal 1-0622

Island Equipment Corp.
P. O. Box 380276
Miami 38, Fla.

See Page 146

J. G. Machine Works
452 West 46th Street
New York 36, N. Y.
CIrcle 6-6373

See Page 7

Kartridg-Pak Co.
9151 Fullerton Avenue
Franklin Park, Ill.
GLadstone 5-1013

U. S. Bottlers Machinery Co.
4015 North Rockwell Street
Chicago 18, Ill.
IRving 8-0263

Capping Equipment

Arenco Machine Co.
25 West 43rd Street
New York 36, N. Y.
BRyant 9-9250

Builders Sheet Metal Works, Inc.
108 Wooster Street
New York 12, N. Y.
CAnal 6-5390

See Page 129

Burt Machine Co.
401 E. Oliver Street
Baltimore 2, Md.
SAratoga 7-2120

Consolidated Packaging Machinery Corp.
1400 West Avenue
Buffalo 13, N. Y.

Index Industrial Corp.
150 Broadway
New York 38, N. Y.
BEekman 3-4180

Kartridg-Pak Co.
9151 Fullerton Avenue
Franklin Park, Ill.
GLadstone 5-1013

Resina Automatic Machinery Co.
572 Smith Street
Brooklyn 31, N. Y.
TRiangle 5-5496

Scientific Filter Co.
57 Rose Street
New York 38, N. Y.
BEekman 3-1210

Cartoners and Carton Packers

Bivans Corp .
2431 Dallas Street
Los Angeles 31, Calif.

Burt Machine Co.
401 E. Oliver Street
Baltimore 2, Md.
SAratoga 7-2120

Chisholm-Ryder Co. of Pennsylvania
Blettner Avenue
Hanover, Pa.
MElrose 7-2133

See Page 128

Clybourn Machine Corp.
6479 N. Avondale
Chicago 31, Ill.
NEwcastle 1-8000

J. L. Ferguson Co.
Route 52
Joliet 3, Ill.

R. A. Jones & Co.
P. O. Box 485
Cincinnati, O.

National Equipment Corp.
153-7 Crosby Street
New York, N. Y.
CAnal 6-5333

Pneumatic Scale Corp.
65 Newport Avenue
North Quincy 71, Mass.

Standard-Knapp Division
Emhart Mfg. Co.
Portland, Conn.

Stokes & Smith Co.
4915 Summerdale Avenue
Philadelphia, Pa.

Triangle Package Machinery Co.
6633 West Diversey Boulevard
Chicago, Ill.
TUxedo 9-0200

Carton Uncaser

Radio Corp. of America, Inc.
Industrial Electronic Products
Bldg. 15-1
Camden, N. J.

Container Cleaning and Purging Equipment

Chisholm-Ryder Co. of Pennsylvania
Blettner Avenue
Hanover, Pa.
MElrose 7-2133

See Page 128

Arthur Colton Co. Division
Snyder Corp.
3598 E. Lafayette
Detroit 7, Mich.

Continental Can Co.
100 East 42nd Street
New York 17, N. Y.
OXford 7-1200

See Page 10

Crown Cork & Seal Co., Inc.
9300 Ashton Road
Philadelphia 36, Pa.
ORchard 3-5100

See Page 14

Food Machinery & Chemical Corp.
342 W. Julian Street
San Jose 6, Calif.
CYpress 4-8124

Island Equipment Corp.
P. O. Box 380276
Miami 38, Fla.

See Page 146

J. G. Machine Works
452 West 46th Street
New York 36, N. Y.
CIrcle 6-6373

See Page 7

Karl Kiefer Machine Co.
919 Martin Street
Cincinnati 2, O.

See Page 11

Kartridg-Pak Co.
9151 Fullerton Avenue
Franklin Park, Ill.
GLadstone 5-1013

Standard-Knapp Division
Emhart Manufacturing Co.
Portland, Conn.

U. S. Bottlers Machinery Co.
4015 North Rockwell Street
Chicago 18, Ill.
IRving 8-0263

Coding Devices

American Marking Corp.
71 Lock Street
Newark 1, N. J.

Bell-Mark Corp.
18 Ropes Place
Newark 7, N. J.

Bivans Corp.
2431 Dallas Street
Los Angeles 31, Calif.

Adolph Gottscho Inc.
6 Evans Terminal
Hillside, N. J.
FLanders 1-1500

Industrial Marking Equipment Co.
655 Berriman Street
Brooklyn 8, N. Y.
NI 9-3305

JCL Engineering Co.
P. O. Box 36 (Wilshire-LaBrea Station)
Los Angeles 36, Calif.

Kartridg-Pak Co.
9151 Fullerton Avenue
Franklin Park, Ill.
GLadstone 5-1013

Kiwi Coders Corp.
4027 North Kedzie Avenue
Chicago 18, Ill.

See Page 133

J. M. Lehman Co.
550 New York Avenue
Lyndhurst, N. J.

John R. Nalbach Engineering Co.
6139 Ogden Avenue
Chicago 50, Ill.
OLympic 2-0833

Compressors

Chicago Pneumatic Tool Co.
8 East 44th Street
New York 17, N. Y.
MUrray Hill 7-1700

Gardner-Denver Co.
Quincy, Ill.

Ingersoll-Rand
11 Broadway
New York 4, N. Y.
DIgby 4-6070

Norwalk Co., Inc.
South Norwalk, Conn.

The Wallace Co.
41 California Street
Bridgeport, Conn.
EDison 6-1141

See Page 150

Conveyors

Arthur Colton Co. Division
Snyder Corp.
3598 E. Lafayette
Detroit 7, Mich.

Eriez Manufacturing Co.
276 Magnet Drive
Erie, Pa.

Island Equipment Corp.
P. O. Box 380276
Miami 38, Fla.

See Page 146

Jeffrey Manufacturing Co.
828 N. Fourth Street
Columbus 16, O.

J. G. Machine Works
452 West 46th Street
New York 36, N. Y.
CIrcle 6-6373

See Page 7

Kartridg-Pak Co.
9151 Fullerton Avenue
Franklin Park, Ill.
GLadstone 5-1013

LePall Co.
234 Main Street
Cary, Ill.

Link Belt Co.
301 West Pershing Road
Chicago 9, Ill.

The Wallace Co.
41 California Street
Bridgeport, Conn.
EDison 6-1141

See Page 150

Wire Belt Co. of America
19 River Street
Winchester, Mass.
PArkview 9-5200

Filters

Alsop Engineering Corp.
Milldale, Conn.

Ertel Engineering Corp.
8-14 N. Front Street
Kingston 8, N. Y.

See Page 149

Filpaco Industries, Inc.
2426 South Michigan Avenue
Chicago 16, Ill.
CAlumet 5-8900

Karl Kiefer Machine Co.
919 Martin Street
Cincinnati 2, O.

See Page 11

Scientific Filter Co.
57 Rose Street
New York 38, N. Y.
BEekman 3-1210

Filter Sheets

Ertel Engineering Corp.
8-14 N. Front Street
Kingston 8, N. Y.

See Page 149

Filpaco Industries, Inc.
2426 South Michigan Avenue
Chicago 16, Ill.
CAlumet 5-8900

Scientific Filter Co.
57 Rose Street
New York 38, N. Y.
BEekman 3-1210

Gasser-Shaker

LeMay Machine Co.
276 LeMay Ferry Road
St. Louis 23, Mo.
HUdson 1-3050

Kartridg-Pak Co.
9151 Fullerton Avenue
Franklin Park, Ill.
GLadstone 5-1013

Ingredient Fillers

Arthur Colton Co. Division
Snyder Corp.
3598 E. Lafayette
Detroit 7, Mich.

F. L. Burt Co.
571 Seventh Street
San Francisco 3, Calif.
KLondike 2-0020

Chisholm-Ryder Corp.
Blettner Avenue
Hanover, Pa.
MElrose 7-2123

See Page 128

DeGray Design, Inc.
900 25th Street
West Palm Beach, Fla.

Elgin Manufacturing Co.
200 Brook Street
Elgin, Ill.

Ertel Engineering Corp.
8-14 N. Front Street
Kingston 8, N. Y.

See Page 149

Filpaco Industries
2426 South Michigan
Chicago 16, Mich.
CAlumet 5-8900

Food Machinery & Chemical Corp.
342 W. Julian Street
San Jose 6, Calif.
CYpress 4-8124

Horix Manufacturing Co.
2601 Chartiers Avenue
Pittsburgh 4, Pa.
FEderal 1-0622

Jet Specialty Co.
2800 South Parkway
Chicago 16, Ill.

See Page 115

J. G. Machine Works
452 West 46th Street
New York 36, N. Y.
CIrcle 6-6373

See Page 7

Karl Kiefer Machine Co.
919 Martin Street
Cincinnati 2, O.

See Page 11

Kartridg-Pak Co.
9151 Fullerton Avenue
Franklin Park, Ill.
GLadstone 5-1013

Laub Engineering Co.
244 N. San Marino Avenue
San Gabriel, Calif.

MRM Co., Inc.
191 Berry Street
Brooklyn 11, N. Y.
EVergreen 7-3936

Multi-Fill Machine Co.
340 North Westwood Avenue
Toledo, O.

National Instrument Co.
2701 Rockwood Avenue
Baltimore 15, Md.
FOrest 7-9124

Packer Machinery Co.
109 14th Street
Brooklyn 15, N. Y.
HU 9-8850

Perry Industries, Inc.
6401 Third Avenue
Brooklyn 20, N. Y.

The Pfaudler Co. Division
Pfaudler Permutit Inc.
Clark Street
Rochester 3, N. Y.

Popper & Sons, Inc.
300 Fourth Avenue
New York 10, N. Y.
ORegon 4-5500

Pressure Pak, Inc.
P. O. Box 2587
West Palm Beach, Fla.

See Page 132

Scientific Filter Co.
57 Rose Street
New York 38, N. Y.
BEekman 3-1210

Mixing Equipment

Abbe Engineering Co.
420 Lexington Avenue
New York 17, N. Y.
COrtland 7-1115

Alsop Engineering Corp.
100 Center Street
Milldale, Conn.

Buschman Products Inc.
114 East 40th Street
New York 16, N. Y.

See Page 106

Eastern Industries Inc.
Hamden 14, Conn.

Ertel Engineering Corp.
8-14 N. Front Street
Kingston 8, N. Y.

See Page 149

Falcon Manufacturing Division
First Machinery Corp.
211 Tenth Street
Brooklyn 15, N. Y.

Filpaco Industries, Inc.
2426 South Michigan Avenue
Chicago 16, Ill.
CAlumet 5-8900

Mixing Equipment Co.
185-N Mt. Read Boulevard
Rochester, N. Y.

Labelers

Burt Machine Co.
401 E. Oliver Street
Baltimore 2, Md.
SAratoga 7-2120

Chisholm-Ryder Co. of Pennsylvania
Blettner Avenue
Hanover, Pa.
MElrose 7-2133

See Page 128

Crompton & Knowles Packaging Corp.
Holyoke, Mass.

Economic Machine Co. Division
Geo. J. Meyer Mfg. Co.
60 Fremont Street
Worcester 3, Mass.

Globe Ticket Co.
112 North 12th Street
Philadelphia 7, Pa.
LOcust 7-2800

Labelette Co.
216 So. Jefferson Street
Chicago 6, Ill.
FRanklin 2-1215

See Page 115

MRM Co.
191 Berry Street
Brooklyn 11, N. Y.
EVergreen 7-3936

Laboratory Filling Equipment

Aerosol Machinery Co.
80A Magnolia Avenue
Westbury, L. I., N. Y.

See Page 136

Builders Sheet Metal Works
108 Wooster Street
New York 12, N. Y.
CAnal 6-5390

See Page 129

Druk-Pak Inc.
36 Merkurstrasse
Zurich, Switzerland

See Page 146

Robert A. Foresman, Jr.
Apparatus Division
1690 Margaret Street
Philadelphia 24, Pa.
PIoneer 3-0596

See Page 138

J. G. Machine Works
452 West 46th Street
New York 36, N. Y.
CIrcle 6-6373

See Page 7

Karl Kiefer Machine Co.
919 Martin Street
Cincinnati 2, Ohio

See Page 11

Kartridg-Pak Co.
9151 Fullerton Avenue
Franklin Park, Ill.
GLadstone 5-1013

LeMay Machine Co.
276 LeMay Ferry Road
St. Louis 23, Mo.
CIrcle 6-6373

John R. Nalbach Engineering Co.
6139 Ogden Avenue
Chicago 50, Ill.
OLympic 2-0833

Pressure Pak, Inc.
P. O. Box 2587
West Palm Beach, Fla.

See Page 132

Laboratory Equipment (Miscellaneous)

Aerosol Machinery Co.
80A Magnolia Avenue
Westbury, L. I., N. Y.
(hand crimper, pressure burette)

See Page 136

Bete Fog Nozzle Inc.
309 Wells Street
Greenfield, Mass.
(spray counter)

Builders Sheet Metal Works, Inc.
108 Wooster Street
New York 12, N. Y.
CAnal 6-5390
(hand operated assembly units, lab ware, screw-on caps, lab ware, etc.)

See Page 129

Fischer & Porter
111 Warminster Road
Warminster, Pa.
OSborne 5-6000
(Aerosol Compatibility Tube)

Robert A. Foresman, Jr.
Apparatus Division
1690 Margaret Street
Philadelphia 24, Pa.
PIoneer 3-0569
(torque meter, tank racks, test ovens, density units, etc.)

See Page 138

J. G. Machine Works
452 West 46th Street
New York 36, N. Y.
CIrcle 6-6373
(nitrogen pressure tester)

See Page 7

Karl Kiefer Machine Co.
919 Martin Street
Cincinnati 2, Ohio
(small run gasser, etc.)

See Page 11

Kartridg-Pak Co.
9151 Fullerton Avenue
Franklin Park, Ill.
GLadstone 5-1013
(burette filler, bottle crimper, etc.)

Monsen Refrigeration
228 Montgomery Street
Bloomfield, N. J.
PIlgrim 3-0634
(refrigerated cabinets)

C. A. Spalding Co.
2242 East Venango Street
Philadelphia 34, Pa.
CUmberland 8-2021
(cap clinching machines)

Leak Detecting Equipment (Electronic and Gas Detectors)

Flamort Chemical Co.
746 Natoma Street
San Francisco 3, Calif.

General Electric Co.
1 River Road
Schenectady, N. Y.

Mine Safety Appliances Co.
230 North Braddock Avenue
Pittsburgh 8, Pa.

National Instrument Laboratories Inc.
828 Evarts Street N.E.
Washington, D. C.

Pressure Pak, Inc.
P. O. Box 2587
West Palm Beach, Fla.
(laboratory unit)

See Page 132

(Hot Water Test Tanks)

Builders Sheet Metal Works, Inc.
108 Wooster Street
New York 12, N. Y.
CAnal 6-5390

See Page 129

Island Equipment Corp.
P. O. Box 380276
Miami 38, Fla.

See Page 146

J. G. Machine Works
452 West 46th Street
New York 36, N. Y.
CIrcle 6-6373

See Page 7

Kartridg-Pak Co.
9151 Fullerton Avenue
Franklin Park, Ill.
GLadstone 5-1013

The Wallace Co.
41 California Street
Bridgeport, Conn.
EDison 6-1141

See Page 150

Mixing Tanks (Stainless Steel)

Alsop Engineering Corp.
1000 Center Street
Milldale, Conn.

Builders Sheet Metal Works, Inc.
108 Wooster Street
New York 12, N. Y.
CAnal 6-5390

See Page 129

Lukens Steel Corp.
Coatesville, Pa.

Filpaco Industries Inc.
2426 S. Michigan Avenue
Chicago 16, Ill.
CAlumet 5-8900

Production Filling Lines

Aerosol Machinery Co.
80A Magnolia Avenue
Westbury, L. I., N. Y.
EDgewood 3-0875
(small production pressure fill)
See Page 136

Builders Sheet Metal Works, Inc.
108 Wooster Street
New York 12, N. Y.
CAnal 6-5390
(small production cold fill)
See Page 129

DeGray Design, Inc.
900 25th Street
West Palm Beach, Fla.
(Nitrogen Only)

J. G. Machine Works
452 West 46th Street
New York 36, N. Y.
CIrcle 6-6373
(pressure only)
See Page 7

Kartridg-Pak Co.
9151 Fullerton Avenue
Franklin Park, Ill.
GLadstone 5-1013
(pressure & cold)

Karl Kiefer Machine Co.
919 Martin Street
Cincinnati 2, O.
See Page 11

Kurek Engineering Co.
5201-B University Avenue
Madison 5, Wis.
Cedar 3-3771

LeMay Machine Co.
276 LeMay Ferry Road
St. Louis 23, Mo.
HUdson 1-3050

John R. Nalbach Eng. Co.
6139 Ogden Avenue
Chicago 50, Ill.
OLympic 2-0833

Oil Equipment Laboratories
600 Pearl Street
Elizabeth, N. J.
ELizabeth 4-3400
(pressure only)
See Page 32

Pressure Pak, Inc.
P. O. Box 2587
West Palm Beach, Fla.
(small-run pressure fill)
See Page 132

Propellant Storage & Handling Systems

Aerosol Equipment Services
1017 Chevy Chase Drive
Anaheim, Calif.
PRospect 2-9197

Doyle & Roth Manufacturing Co.
136 24th Street
Brooklyn 32, N. Y.

Kartridg-Pak Co.
9151 Fullerton Avenue
Franklin Park, Ill.
GLadstone 5-1013

H. Emerson Thomas & Associates
P. O. Box 270-B
Westfield, N. J.
ADams 2-2800
See Page 140

Vilter Manufacturing Co.
2217 S. First Street
Milwaukee 7, Wisc.

The Wallace Co.
41 California Street
Bridgeport, Conn.
EDison 6-1141
See Page 160

Propellant Storage Tanks

Arrow Equipment Co.
P. O. Box 2682
Memphis, Tenn.

Delta Tank Manufacturing Co.
Subsidiary, General Gas Corp.
Baton Rouge, La.

Master Tank & Welding Co.
2000 S. Front Street
Quincy, Ill.
BAldwin 3-5014
See Page 138

Master Tank & Welding Co.
P. O. Box 5146
Dallas, Tex.
RIverside 7-2441
See Page 138

Pressed Steel Tank Co.
1445 S. 66th Street
Milwaukee 14, Wis.
GReenfield 6-0500

H. Emerson Thomas Associates
P. O. Box 270-B
Westfield, N. J.
ADams 2-2800
See Page 140

Trinity Steel Co.
Engineering Division
4001 Irving Boulevard
Dallas 12, Texas
FLeetwood 7-3961

Pumps

Alsop Engineering Corp.
Milldale, Conn.

Aurora Pump Division
The New York Air Brake Corp.
62 Loucks Street
Aurora, Ill.

Beach-Russ Co.
420 Lexington Avenue
New York 17, N. Y.

Corkens, Inc.
P. O. Box 1062
Oklahoma City 1, Okla.
CEntral 5-5517
See Page 32

Eco Engineering Co.
12 New York Avenue
Newark 1, N. J.

Ertel Engineering Corp.
8-14 N. Front Street
Kingston 8, N. Y.

See Page 149

Filpaco Industries, Inc.
2426 S. Michigan Avenue
Chicago 16, Ill.
CAlumet 5-8900

Gray Company, Inc.
22 Graco Square
Minneapolis 13, Minn.

JG Machine Works
452 W. 46th Street
New York 36, N. Y.
CIrcle 6-6373

See Page 7

Kartridg-Pak Co.
9151 Fullerton Avenue
Franklin Park, Ill.
GLadstone 5-1013

The LaBour Co., Inc.
Elkhart, Ind.

Viking Pump Co.
Cedar Falls, Iowa

The Wallace Co.
41 California Street
Bridgeport, Conn.
EDison 6-1141

See Page 150

Refrigeration Equipment

Atlas Engineering Co.
1901 White Street
Des Plaines, Ill.
VAnderbilt 4-5433

Kartridg-Pak Co.
9151 Fullerton Avenue
Franklin Park, Ill.
GLadstone 5-1013

H. Loeb & Son
4600 Lancaster Avenue
Philadelphia, Pa.

Monsen Refrigeration
228 Montgomery Street
Bloomfield, N. J.
PIlgrim 3-0634

Vilter Manufacturing Co.
2217 S. First Street
Milwaukee 7, Wisc.

The Wallace Co.
41 California Street
Bridgeport, Conn.
EDison 6-1141

See Page 150

Valve Feeder & Inserter

Consolidated Packaging Machinery Corp.
1400 West Avenue
Buffalo 13, N. Y.

Kartridg-Pak Co.
9151 Fullerton Avenue
Franklin Park, Ill.
GLadstone 5-1013

John R. Nalbach Engineering Co.
6139 Ogden Avenue
Chicago 50, Ill.
OLympic 2-0833

PMC Industries, Inc.
293 Hudson Street
Hackensack, N. J.

See Page 10?

Weighers & Classifiers

Exact Weight Scale Co.
538 E. Town Street
Columbus 15, O.
CApital 4-6187

Hi-Speed Checkweigher Co.
605 West State Street
Ithaca, N. Y.
IThaca 9041

Mettler Instrument Corp.
P. O. Box 100
Princeton, N. J.

Scale Specialties, Inc.
Box 574
Denville, N. J.
DEerfield 4-4808

Toledo Scale Co.
1097 Telegraph Road
Toledo 13, O.

MISCELLANEOUS EQUIPMENT

(Aerosol Dispensing Devices, Automatic)

Syncro-Mist Controls, Inc.
270 Madison Avenue
New York, N. Y.
MUrray Hill 5-4650

(Agitator Pellet Feeders)

J. G. Machine Works
452 W. 46th Street
New York 36, N. Y.
CIrcle 6-6373

See Page 7

Jet Specialty Co.
2800 South Parkway
Chicago 16, Ill.

See Page 115

Kartridg-Pak Co.
9151 Fullerton Avenue
Franklin Park, Ill.
GLadstone 5-1013

John R. Nalbach Engineering Co.
6139 Ogden Avenue
Chicago 50, Ill.
OLympic 2-0833

(Cellulose Cap-Banding Machine)

John Burton Machine Corp.
420 Market Street
San Francisco 11, Calif.

(Container Fill Inspection Systems)

Industrial Nucleonics Corp.
1205 Chesapeake Avenue
Columbus, Ohio

(Fusible Safety Solder Seal—for Valves)

IKI Manufacturing Co.
107 Maple Street
Edgerton, Wis.

See Page 143

(Gas Regulators)

Air Reduction Co.
150 E. 42nd Street
New York 17, N. Y.
MUrray Hill 2-6700

(Heat Exchanger—for cold filling)

Chemetron Corp.
Girdler Process Equipment Division
334 E. Broadway
Louisville 2, Ky.
JU 7-7553

(Indexing Equipment)

DeGray Design, Inc.
900 25th Street
West Palm Beach, Fla.

(pH Meter)

Analytical Measurements, Inc.
585 Main Street
Chatham, N. J.

Harshaw Scientific Division
Harshaw Chemical Co.
1945 E. 97th Street
Cleveland 6, Ohio

(Pressure Tester and Venter)

Robins Engineering Co.
208 Maple Avenue
North Haven, Conn.

(Product Homogenizer)

Buschman Products Inc.
114 East 40th Street
New York 16, N. Y.

See Page 106

(Pyncometer)

T. M. Long Co.
Somerville, N. J.

Houston Instrument Co.
Box 22234
Houston 27, Texas

(Spray Can Handle)

Alfco, Inc.
4950 South Sepulveda Blvd.
Culver City, Calif.
UPton 0-6716

See Page 95

(Tube Inserting Devices)

Chase Equipment Corp. of N. Y.
47 East 19th Street
New York 3, N. Y.
ORegon 7-3220

(Teflon Transfer Hose)

Aeroquip Corp.
300 S. East Avenue
Jackson, Mich.
STate 2-0361

Resistoflex Corp.
Woodland Road
Roseland, N. J.

(Test Cabinets—Controlled Temp.)

Bally Case and Cooler, Inc.
Bally, Pa.

Labline, Inc.
3070 W. Grand Avenue
Chicago 22, Ill.

(Valve Assembly Unit)

American Special Machine Co.
1401 Western Avenue
Chicago 14, Ill.
EAstgate 7-2220

(Valves for Propellant Transfer)

Bastian-Blessing Co.
4201 W. Peterson Avenue
Chicago, Ill.
MUlberry 5-1121

(Vernier Valve Caliper)

DeGray Design, Inc.
900 25th Street
West Palm Beach, Fla.

(Wall Holder)

Lorac Industries
96 MacArthur Lane
Tarrytown, N. Y.
MEdford 1-3432

Useful Products Corp.
24 N. Clover Drive
Great Neck, N. Y.
HU 7-2517

ESSENTIAL OILS
See "Perfuming Materials"

FILLERS, See "Custom Fillers"

GIBBERELLIC ACID

Eli Lilly & Co.
Agricultural & Industrial Division
740 S. Alabama Street
Indianapolis 6, Ind.

Merck & Co.
Chemical Division
Rahway, N. J.
RAhway 7-1200

S. B. Penick & Co.
Agricultural Chemicals Division
4161 Beck Avenue
St. Louis 16, Mo.

See Page 22

Chas. Pfizer & Co.
630 Flushing Avenue
Brooklyn 6, N. Y.
EVergreen 8-3800

See Page 21

Velsicol Chemical Corp.
330 E. Grand Avenue
Chicago 11, Ill.
DElaware 7-7383

See Page 61

HAIR SPRAY RESINS

Ciba Co., Inc.
Route 208
Fairlawn, N. J.
SWarthmore 1-1122

General Aniline & Film Corp.
Acetylene Chemicals Division
435 Hudson Street
New York 14, N. Y.
(Polyvinylpyrollidone and PVP/VA Copolymers)

National Starch and Chemical Corp.
Resin Division
750 Third Avenue
New York 17, N. Y.

INSECTICIDE MATERIALS

American Cyanamid Co.
30 Rockefeller Plaza
New York 20, N. Y.
CIrcle 7-0100
(Malathion)

Chemical Insecticide Corp.
30 Whitman Avenue
Metuchen, N. J.
LIberty 9-2300
(Rotenone resins, Pyrethrum)

Diamond Alkali Co.
300 Union Commerce Building
Cleveland 14, Ohio
MAin 1-6100
(DDT, Benzene Hexachloride, Lindane)

E. I. du Pont de Nemours & Co. (Inc.)
Wilmington 98, Del.
(Methoxychlor)

Fairfield Chemical Division
Food Machinery & Chemical Corp.
441 Lexington Avenue
New York 17, N. Y.
OXford 7-1940
(Pyrethrum Concentrates, Dri-Die, Rotenone Resins, and Synergists)
See Page 75

Geigy Agricultural Chemicals Division
Geigy Chemical Co.
P. O. Box 450
Yonkers, N. Y.
(Methoxychlor, DDT, Diazinon)
See Page 99

General Chemical Division
Allied Chemical Corp.
40 Rector Street
New York 6, N. Y.
HAnover 2-7300
(Lindane, DDT, BHC)
See Pages 86, 87

R. W. Greeff & Co.
10 Rockefeller Plaza
New York 20, N. Y.
CIrcle 6-9680
(DDT, DDVP)

Hercules Powder Co.
Agricultural Chemicals Division
984 Market Street
Wilmington 99, Del.
OLympia 8-7211
(Toxaphene, Thanite, Delnav)

Heyden Newport Chemical Co.
342 Madison Avenue
New York 17, N. Y.
(Strobane)

Olin Mathieson Chemical Corp.
10 Light Street
Baltimore, Md.
PLaza 2-8300
(DDT, BHC)

McLaughlin Gormley King Co.
1715 Fifth Street S. E.
Minneapolis, Minn.
FRanklin 1-1808
(Pyrethrum, Allethrin, and Synergists)
See Page 31

S. B. Penick & Co.
Agricultural Chemicals Division
4161 Beck Avenue
St. Louis 16, Mo.
(Pyrethrum, Synergists and Rotenone Resins)
See Page 22

Prentiss Drug & Chemical Co.
101 West 31st Street
New York 1, N. Y.
PEnnsylvania 6-6766
(Pyrethrum, Synergists, Sulfoxide, and Rotenone Resins)
See Page 13

Rohm & Haas Co.
222 W. Washington Square
Philadelphia 5, Pa.
LOcust 3-9860
(Lethane, Perthane and Rhothane)
See Page 27

Shell Chemical Corp.
Agricultural Chemicals Division
460 Park Avenue
New York 22, N. Y.
PLaza 5-5400
(Aldrin, Dieldrin, and Endrin)

Stauffer Chemical Co.
380 Madison Avenue
New York 17, N. Y.
OXford 7-0600
(DDT, Malathion)

Velsicol Chemical Corp.
330 E. Grand Avenue
Chicago 11, Ill.
DElaware 7-7383
(Chlordane, Heptachlor)
See Page 61

INSECT REPELLENTS

Cowles Chemical Co.
Organic Chemicals Dept.
Cleveland 3, O.
(Diethyl Toluamide)
See Page 111

Glenn Chemical Co.
2735 N. Ashland Avenue
Chicago 14, Ill.
EAstgate 7-9350
(Tabatrex)

Fairfield Chemical Division
Food Machinery & Chemical Corp.
441 Lexington Avenue
New York 17, N. Y.
OXford 7-1940
(Crag Fly Repellent)
See Page 75

Hercules Powder Co.
970 Market Street
Wilmington 99, Del.
(Diethyl Toluamide)

McLaughlin Gormley King Co.
1715 S.E. Fifth Street
Minneapolis, Minn.
FRanklin 1-1805
(MGK Repellent 11, MGK Repellent 326)
See Page 31

Naugatuck Chemical Division
Dominion Rubber Co., Ltd.
Elmira, Ont.
MOhawk 9-5466
(Diethyl Toluamide)

LANOLIN AND LANOLIN DERIVATIVES

American Cholesterol Products, Inc.
Talmadge Road
Edison, N. J.
LIberty 8-6600

See Page 8

American Lanolin Corp.
Railroad Street
Lawrence, Mass.
LAwrence 3-2729

Croda, Inc.
15 East 26th Street
New York 10, N. Y.
MUrray Hill 3-3089

Lanaetex Products, Inc.
151 Third Avenue
Elizabeth, N. J.
Elizabeth 2-7568

Malmstrom Chemical Corp.
259 Parkhurst Street
Newark 5, N. J.
Talbot 4-2200

Robinson Wagner Co.
628 Waverly Avenue
Mamaroneck, L. I., N. Y.

ODOR NEUTRALIZERS

Alpine Aromatics
Edison Industrial Center
U. S. Highway 1
Metuchen, N. J.
LIberty 8-7202
(Namée)

See Page 109

International Wax Refining Co.
99 E. Hawthorne Avenue
Valley Stream, N. Y.
(Intasol)

Motomco, Inc.
Terminal Avenue
Clark, N. J.
FUlton 1-3033
(Metazene)

See Page 127

National Cylinder Gas Division
Chemetron Corp.
1200 N. Claremont Avenue
Chicago 22, Ill.
HUmboldt 6-1462

Prentiss Drug & Chemical Co.
101 West 31st Street
New York 1, N. Y.
PEnnsylvania 6-6766
(Meelium)

See Page 13

Solvay Process Division
Allied Chemical Corp.
61 Broadway
New York 6, N. Y.
HAnover 2-7300
(Ozene)

NYLON AND OTHER PLASTIC RESINS (for manufacture of containers)

E. I. du Pont de Nemours & Co.
Polychemicals Division
Wilmington 98, Del.
PRospect 4-1000
(Delrin and Zytel)

Hercules Powder Co.
984 Market Street
Wilmington 99, Del.
OLympia 8-7211
(Profax)

Spencer Chemical Co.
Dwight Building
Kansas City 5, Mo.
(nylon)

PAINT, LACQUER & ENAMEL CONCENTRATES

Capitol Chemical Co.
1501 N. 31st Street
Melrose Park, Ill.
COlumbus 1-6295

Illinois Bronze Powder Co.
2023 South Clark Street
Chicago 16, Ill.
VIctory 2-0660

See Page 143

Marbon Chemical Division
Borg-Warner Corp.
P. O. Box 68
Washington, W. Va.
VOlunteer 3-5353

National Chemicals & Plastics Co.
1424 Philpot Street
Baltimore 31, Md.
PEabody 2-1783

See Page 12

PAINT RESINS

American Cyanamid Co.
30 Rockefeller Plaza
New York 20, N. Y.
CIrcle 7-0100
(Cycopol Resins)

Archer-Daniels-Midland
700 Investors Building
Minneapolis 2, Minn.

Capitol Chemical Co.
1501 N. 31st Street
Melrose Park, Ill.
COlumbus 1-6295

Commercial Solvents Corp.
260 Madison Avenue
New York 16, N. Y.

Keystone Refining Co.
4821-31 Garden Street
Bridesburg, Philadelphia 37, Pa.

Shawinigan Resins Corp.
Springfield 1, Mass.

Lawter Chemicals, Inc.
3550 Touhy
Chicago 45, Ill.

National Chemicals & Plastics Co.
1424 Philpot Street
Baltimore 31, Md.
PEabody 2-1783

See Page 12

PERFUMING MATERIALS

Alpine Aromatics
Edison Industrial Center
U. S. Highway 1
Metuchen, N. J.
LIberty 8-7202

See Page 109

Aromatic Products, Inc.
235 Fourth Avenue
New York 3, N. Y.
ORegon 4-9114

Antoine Chiris Co.
220 East 23rd Street
New York, N. Y.
LExington 2-6035

See Page 107

Compagnie Parento, Inc.
68 Brook Street
Croton-on-Hudson, N. Y.

De Laire, Inc.
242 West 30th Street
New York 1, N. Y.
CHickering 4-7455

Dodge & Olcott, Inc.
180 Varick Street
New York 14, N. Y.
WAtkins 4-3600

See Page 113

Ets. De Trevise
42 Rue de La Reine Henriette
Colombes (Seine), France

See Page 132

Ets. De Trevise
158 Copenhagen Street
London N. 1, England

See Page 132

Dragoco, Inc.
250 West Broadway
New York 13, N. Y.
CAnal 6-5813

P. R. Dreyer Inc.
601 West 26th Street
New York 1, N. Y.
WAtkins 9-1570

Felton Chemical Co.
599 Johnson Avenue
Brooklyn, N. Y.
HYacinth 7-4464

See Page 88

Firmenich, Inc.
250 West 18th Street
New York 11, N. Y.
WAtkins 9-5520

Fleuroma, Inc.
43-23 Dreyer Avenue
Long Island City, N. Y.
RAvenswood 1-8282

See Page 101

Florasynth Laboratories, Inc.
900 Van Nest Avenue
New York 62, N. Y.
TAlmadge 8-6000

See Page 136

Fries & Fries
110 East 70th Street
Cincinnati, Ohio
VAlley 1-7200

See Page 128

Fritzsche Brothers, Inc.
76 9th Avenue
New York 11, N. Y.
WAtkins 9-4100

See Page 9

Givaudan-Delawanna, Inc.
321 W. 44th Street
New York 36, N. Y.
CIrcle 5-0300

See Page 78

Heine & Co.
601 West 26th Street
New York 1, N. Y.
ORegon 5-9039

Knapp Products, Inc.
178 Hamilton Avenue
Lodi, N. J.
PRescott 9-6945

Lautier Fils Inc.
321 Fifth Avenue
New York 16, N. Y.
MUrray Hill 9-7980

Magnus, Mabee & Reynard, Inc.
16 Desbrosses Street
New York 13, N. Y.
WAlker 5-1110

See Page 20

J. Manheimer
214 East 21st Street
New York 10, N. Y.
GRamercy 5-4640

Norda Essential Oil & Chemical Co.
601 West 26th Street
New York 1, N. Y.
WAtkins 4-7878

See Page 64

Noville Essential Oil Co.
1312 Fifth Street
North Bergen, N. J.
UNion 7-9080

Orbis Products Corp.
601 West 26th Street
New York 1, N. Y.
WAtkins 4-7660

S. B. Penick & Co.
100 Church Street
New York, N. Y.
COrtland 7-1970

See Page 22

Perfumery Associates, Inc.
160 East 56th Street
New York 22, N.Y.
PLaza 3-8618

Perry Brothers
61-12 32nd Avenue
Woodside 77, L. I., N. Y.
RAvenswood 1-3636

P F W
33 Sprague Avenue
Middletown, N. Y.
DIamond 2-1065

See Page 17

Polak & Schwarz Division
International Flavors & Fragrances, Inc.
667 Washington Street
New York 14, N. Y.
WAtkins 4-5570

See Page 83

Reynaud Ltd.
355 W. 52nd Street
New York 19, N. Y.
CIrcle 5-4430

Rhodia Inc.
60 E. 56th Street
New York 22, N. Y.
PLaza 3-4850

P. Robertet, Inc.
221 Fourth Avenue
New York 3, N. Y.
ORegon 3-7585

Roubechez, Inc.
8 East 12th Street
New York 3, N. Y.
ALgonquin 5-7262

See Page 30

Roure-Dupont, Inc.
366 Madison Avenue
New York, N. Y.
VAnderbilt 6-5830

See Page 120

Schimmel & Co.
601 West 26th Street
New York 1, N. Y.
WAtkins 4-1393

See Page 116

Shulton, Inc.
Fine Chemicals Division
630 Fifth Avenue
New York 20, N. Y.
CIrcle 5-6263

Standard Aromatics
88 University Place
New York, N. Y.
OREgon 5-4333

Synfleur Scientific Laboratories
Monticello, N. Y.
Monticello 84

See Page 25

Syntomatic Corp.
114 East 32nd Street
New York 16, N. Y.
MUrray Hill 3-7618

Tombarel Products Corp.
725 Broadway
New York 3, N. Y.
GRamercy 7-4530

Ungerer & Co.
161 Ave. of the Americas
New York 13, N. Y.
ALgonquin 5-4660

van Ameringen-Haebler Division
International Flavors & Fragrances, Inc.
521 West 57th Street
New York, N. Y.
CIrcle 6-2700

See Page 83

Van Dyk & Co.
11 William Street
Belleville, N. J.
PLymouth 9-3225

Albert Verley & Co.
1375 E. Linden Avenue
Linden, N. J.
WAbash 5-1105

Verona Aromatics Division
Verona-Pharma Chemical Co.
26 Verona Avenue
Newark 4, N. J.
HUmboldt 3-3200

R. D. Webb & Co.
137 Boston Post Road
Cos Cob, Conn.

PRODUCT CONCENTRATE
(Especially for Aerosol Packaging)

Chemical Compounding Co.
262 Huron Street
Brooklyn, N. Y.
EVergreen 3-8200

Hysan Products Co.
932 West 38th Street
Chicago, Ill.
VIrginia 7-1168

Pesticide Sales Corp.
415 Lexington Avenue
New York 17, N. Y.
MUrray Hill 7-8313

Private Brands Inc.
300 South Third Street
Kansas City 18, Kan.
FInley 2-8780

Propel Chemicals Inc.
262 Huron Street
Brooklyn 22, N. Y.
EVergreen 9-5531

Uncle Sam Chemical Co.
575 W. 131st Street
New York 27, N. Y.
AUdubon 6-2510

Uni-Wax Aerosol & Chemical Corp.
Division of Woodside Precisionic Corp.
80 Washington Street
New York 6, N. Y.

Wilco Co.
4425 Bandini Boulevard
Los Angeles 23, Calif.
ANgelus 3-4105

PROPELLANTS
(Fluorinated Hydrocarbons)

E. I. du Pont de Nemours & Co.
Freon Products Division
Wilmington 98, Del.
OLympia 4-5121
(Freon)

See Page 16

General Chemical Division
Allied Chemical Corp.
40 Rector Street
New York 6, N. Y.
HAnover 2-7300
(Genetron)

See Pages 86, 87

Pennsalt Chemicals Corp.
3 Penn Center Plaza
Philadelphia 2, Pa.
LOcust 4-4700
(Isotron)

See Page 24

Union Carbide Chemicals Co.
Division, Union Carbide Corp.
270 Park Avenue
New York 17, N. Y.
MUrray Hill 7-8000
(Ucon)

See Page 26

(Liquefied Petroleum—Butane & Propane)

Cities Service Oil Co.
Bartlesville, Okla.

Phillips Petroleum Co.
Special Products Division
Bartlesville, Okla.
FEderal 6-6600

(Methylene Chloride)

American Mineral Spirits Co.
Mountain Avenue
Murray Hill, N. J.
CRestview 3-0700

Diamond Alkali Co.
925 Euclid Avenue
Cleveland 14, Ohio
MAin 1-6100

Dow Chemical Co.
Midland, Mich.
MElrose 6-1000

E. I. du Pont de Nemours & Co.
Electro Chemicals Dept.
Wilmington 98, Del.
OLympia 4-5121

Frontier Chemical Co.
Municipal Airport Terminal Bldg.
Wichita 15, Kan.

General Chemical Division
Allied Chemical Corp.
40 Rector Street
New York 6, N. Y.
HAnover 2-7300

See Pages 86, 87

Kolker Chemical Corp.
600 Doremus Avenue
Newark 5, N. J.
MArket 2-4085

Stauffer Chemical Co.
380 Madison Avenue
New York 17, N. Y.
OXford 7-0600

(Nitrogen)

Air Reduction Co., Inc.
150 East 42nd Street
New York 17, N. Y.
MUrray Hill 2-6700

Linde Co. Division
Union Carbide Corp.
30 East 42nd Street
New York 17, N. Y.
MUrray Hill 7-8000

National Cylinder Gas Division
Chemetron Corp.
1200 N. Claremont Avenue
Chicago 22, Ill.
HUmboldt 6-1462

Ohio Chemical & Surgical Equipment Co.
Division, Air Reduction Co.
1400 E. Washington Avenue
Madison 10, Wisc.

(Soluble Gases—including Nitrous Oxide, Carbon Dioxide and CO_2-N_2O Mixtures)

Pure Carbonic Co. Division
Air Reduction Co., Inc.
150 East 42nd Street
New York 17, N. Y.
MUrray Hill 2-6700

National Cylinder Gas Division
Chemetron Corp.
1200 N. Claremont Avenue
Chicago 22, Ill.
HUmboldt 6-1462

Ohio Chemical & Surgical Equipment Co.
Division, Air Reduction Co.
1400 E. Washington Avenue
Madison 10, Wisc.

Standard Air Co.
335 Paterson Plank Road
Carlstadt, N. J.
GEneva 8-5449

S. S. White Dental Mfg. Co.
211 S. 12th Street
Philadelphia 5, Pa.
WAlnut 3-1621

SHELLAC

Acme Shellac Products Co.
108 Blanchard Street
Newark 5, N. J.
MArket 3-7707

Bradshaw Praeger & Co.
3248 West 47th Place
Chicago 32, Ill.
LAfayette 3-2050

Gillespie-Rogers-Pyatt Co.
75 West Street
New York 6, N. Y.
WHitehall 3-9740

Mac-Lac Co. Division
Mantrose Corp.
99 Park Avenue
New York 16, N. Y.
MUrray Hill 7-2762

F. H. Paul & Stein Brothers
235 5th Avenue
New York, N. Y.
MUrray Hill 4-6370

William Zinsser & Co.
516 West 59th Street
New York 19, N. Y.
COlumbus 5-2800

SILICONES

Dow, Corning Corp.
Midland, Mich.
TEmple 2-2371

See Page 33

General Electric Co.
Silicone Products Dept.
Waterford, N. Y.
ADams 8-3330

Union Carbide Corp.
Silicones Division
270 Park Avenue
New York 17, N. Y.
LL 1-2345

See Page 110

TRICHLOROETHANE

American Mineral Spirits Co.
Mountain Avenue
Murray Hill, N. J.
CRestview 3-0700

Dow Chemical Co.
Midland, Mich.
MElrose 6-1000

Merchants Chemical Co.
60 East 42nd Street
New York, N. Y.
MUrray Hill 2-8712

Union Carbide Chemicals Co. Division
Union Carbide Corp.
30 East 42nd Street
New York 17, N. Y.
MUrray Hill 7-8000

See Page 26

MISCELLANEOUS RAW MATERIALS

(Agitating Balls for Paints and Powders)

Sterling Commercial Steel Ball Corp.
Box 401
Sterling, Ill.
MA 5-2750

(Anhydrous Alcohol)

Commercial Solvents Corp.
260 Madison Avenue
New York 17, N. Y.
LExington 2-6420

Enjay Co.
15 West 51st Street
New York 19, N. Y.

U. S. Industrial Chemicals Co. Division
National Distillers and Chemical Corp.
99 Park Avenue
New York 16, N. Y.
OXford 7-0700

See Page 114

(Antioxidants and Bacteriostats)

Catalin Corporation of America
One Park Avenue
New York 16, N. Y.
MUrray Hill 3-2100

R. T. Vanderbilt & Co.
230 Park Avenue
New York 17, N. Y.
(Vancide)

(Foam Stabilizers)

Kessler Chemical Co.
State Road and Cottam Avenue
DE 2-6515
Philadelphia 35, Pa.

S. B. Penick & Co.
100 Church Street
New York, N. Y.
COrtland 7-1970

See Page 22

Ultra Chemical Works Division
Witco Chemical Co.
2 Wood Street
Paterson, N. J.
ARmory 4-0100

(Pharmaceuticals—Antibiotics)

Chemo Puro Manufacturing Co.
150 Doremus Avenue
Newark 5, N. J.

Ciba Pharmaceutical Products
Summit, N. J.

Commercial Solvents Corp.
260 Madison Avenue
New York 16, N. Y.

Lederle Laboratories Division
American Cyanamid Co.
Pearl River, N. Y.

Eli Lilly & Co.
740 S. Alabama Street
Indianapolis 6, Ind.

Merck & Co.
Rahway, N. J.
RAhway 7-1200

S. B. Penick & Co.
N. Y. Quinine Division
100 Church Street
New York 8, N. Y.
CO 7-1970

See Page 22

Chas. Pfizer & Co.
Chemical Sales Division
630 Flushing Avenue
Brooklyn 6, N. Y.
EVergreen 8-3800

See Page 21

Wallerstein Co.
Wallerstein Square
Mariner's Harbor
Staten Island 3, N. Y.

(Quaternary Ammonium Compounds)

Commercial Solvents Corp.
260 Madison Avenue
New York 16, N. Y.

Fine Organics Inc.
205 Main Street
Lodi, N. J.

General Aniline & Film Corp.
Antara Chemicals Division
435 Hudson Street
New York 14, N. Y.

Miranol Chemical Co.
277 Coit Street
Irvington, N. J.

Onyx Oil & Chemical Co.
190 Warren Street
Jersey City 2, N. J.
HEnderson 4-1700

Rohm & Haas Co.
222 Washington Street
Philadelphia 5, Pa.
LOcust 3-9860

See Page 27

Sterwin Chemicals, Inc.
1450 Broadway
New York 18, N. Y.
LAckawanna 4-6400

(Snow Pellets)

Baltic Chemical Co.
115-119 Fourth Avenue
Brooklyn 17, N. Y.
NEvins 8-6401

See Page 145

(Thickening Agents)

American Cyanamid Co.
30 Rockefeller Plaza
New York 20, N. Y.
CIrcle 7-0100

B. F. Goodrich Chemical Co.
3135 Euclid Avenue
Cleveland 15, O.
Utah 1-8200

Kessler Chemical Co.
State Road and Cottam Avenue
Philadelphia 35, Pa.
DE 2-6565

S. B. Penick & Co.
100 Church Street
New York, N. Y.
COrtland 7-1970

See Page 22

R. T. Vanderbilt Co.
230 Park Avenue
New York 17, N. Y.
(Veegum)

VALVES, AEROSOL
(General Purpose)

Aerosol Research Co.
743 S. Circle Avenue
Forest Park, Ill.
FOrest 6-4880

See Page 3

Clayton Corp.
4205 Forest Park Boulevard
St. Louis 8, Mo.
JEfferson 5-6226

See Page 77

Emson Research, Inc.
22 Burr Court
Bridgeport, Conn.
EDison 6-2553

See Page 15

Newman-Green, Inc.
507 Interstate Road
Addison, Ill.
TErrace 2-1000

See Page 19

Oil Equipment Laboratories, Inc.
600 Pearl Street
Elizabeth, N. J.
ELizabeth 4-3900

See Page 28

Precision Valve Corp.
700 Nepperhan Avenue
Yonkers 3, N. Y.
YOnkers 9-6500

See Page 34

Risdon Manufacturing Co.
Naugatuck, Conn.
PArk 9-8231

SAFCA (France)
7 Rue de Louvre
Paris, France

SAFCA (England)
Milbanke Way
Bracknell, Berkshire, England

A. Schrader's Son
Div. Scovill Mfg. Co., Inc.
470 Vanderbilt Avenue
Brooklyn, N. Y.
NEvins 8-4000

See Page 6

Seaquist Manufacturing Corp.
First Street
Cary, Ill.
MEcury 9-7533

Valve Corporation of America
1720 Fairfield Avenue
Bridgeport, Conn.
EDison 3-3165

See Back Cover

VALVES, AEROSOL (Foam)

Aerated Container Corp.
Dairy Whip Division
39 So. LaSalle Street
Chicago, Ill.
CEntral 6-7460

See Page 91

Aerosol Research Co.
743 S. Circle Avenue
Forest Park, Ill.
FOrest 6-4880

See Page 3

Emson Research, Inc.
22 Burr Court
Bridgeport, Conn.
EDison 6-2553

See Page 15

Clayton Corp.
4205 Forest Park Boulevard
St. Louis 8, Mo.
JEfferson 5-6226

See Page 77

Clinton Valves, Inc.
35135 Groesbeck Highway
Mt. Clemens, Mich.

LeMay Valve Co.
276 LeMay Ferry Road
St. Louis 23, Mo.
HUdson 1-3050

Newman-Green, Inc.
507 Interstate Road
Addison, Ill.
TErrace 2-1000

See Page 19

Oil Equipment Laboratories, Inc.
600 Pearl Street
Elizabeth, N. J.
ELizabeth 4-3900

See Page 28

Precision Valve Corp.
700 Nepperhan Avenue
Yonkers 3, N. Y.
YOnkers 9-6500

See Page 34

Risdon Manufacturing Co.
Naugatuck, Conn.
PArk 9-8231

Seaquist Manufacturing Corp.
First Street
Cary, Ill.
MErcury 9-7533

Super Whip Valve Co.
4101 N. Rockwell Street
Chicago 18, Ill.
JUniper 8-6300

See Page 121

Valve Corp. of America
1720 Fairfield Avenue
Bridgeport, Conn.
EDison 3-3165

See Back Cover

VALVES, AEROSOL (Food)

Aerated Container Corp.
Dairy Whipt Division
39 So. LaSalle Street
Chicago, Ill.
CEntral 6-7460

See Page 91

Clayton Corp.
4205 Forest Park Boulevard
St. Louis 8, Mo.
JEfferson 5-6226

See Page 77

Clinton Valves, Inc.
35135 Groesbeck Highway
Mt. Clemens, Mich.

LeMay Machine Co.
276 LeMay Ferry Road
St. Louis 23, Mo.
HUdson 1-3050

Oil Equipment Laboratories, Inc.
600 Pearl Street
Elizabeth, N. J.
ELizabeth 4-3900

See Page 28

Precision Valve Corp.
700 Nepperhan Avenue
Yonkers 3, N. Y.
YOnkers 9-6500

See Page 34

Risdon Manufacturing Co.
Naugatuck, Conn.
PArk 9-8231

Super Whip Valve Co.
4101 N. Rockwell Street
Chicago 18, Ill.
JUniper 8-6300

See Page 121

VALVES, AEROSOL (Glass and Plastic Bottle)

Aerosol Research Co.
743 S. Circle Avenue
Forest Park, Ill.
FOrest 6-4880

See Page 3

Emson Research, Inc.
22 Burr Court
Bridgeport, Conn.
EDison 6-2553

See Page 15

Newman-Green, Inc.
501 Interstate Road
Addison, Ill.
TErrace 2-1000

See Page 19

Precision Valve Corp.
700 Nepperhan Avenue
Yonkers 3, N. Y.
YOnkers 9-6500

See Page 34

Risdon Manufacturing Co.
Box 520
Naugatuck, Conn.
PArk 9-8231

SAFCA (France)
7 Rue de Louvre
Paris, France

SAFCA (England)
Milbanke Way
Bracknell, Berkshire, England

Valve Corp. of America
1720 Fairfield Avenue
Bridgeport, Conn.
EDison 3-3165

See Back Cover

VALVES, AEROSOL (Mechanical Break-Up)

Aerosol Research Co.
743 S. Circle Avenue
Forest Park, Ill.
FOrest 6-4880

See Page 3

Emson Research, Inc.
22 Burr Court
Bridgeport, Conn.
EDison 6-2553

See Page 15

Newman-Green, Inc.
501 Interstate Road
Addison, Ill.
TErrace 2-1000

See Page 19

Precision Valve Corp.
700 Nepperhan Avenue
Yonkers 3, N. Y.
YOnkers 9-6500

See Page 34

Risdon Manufacturing Co.
Box 520
Naugatuck, Conn.
PArk 9-8231

Valve Corp. of America
1720 Fairfield Avenue
Bridgeport, Conn.
EDison 3-3165

See Back Cover

VALVES, AEROSOL (Metered)

Dill Manufacturing Co.
700 East 82nd Street
Cleveland, O.
UTah 1-3200

Emson Research, Inc.
22 Burr Court
Bridgeport, Conn.
EDison 6-2553

See Page 15

Hampton Products Co.
Hestor Street
Portland, Pa.
TWin Oaks 7-6103

Newman-Green, Inc.
507 Interstate Road
Addison, Ill.
TErrace 2-1000

See Page 19

Precision Valve Corp.
700 Nepperhan Avenue
Yonkers 3, N. Y.
YOnkers 9-6500

See Page 34

Risdon Manufacturing Co.
Box 520
Naugatuck, Conn.
PArk 9-8231

Valve Corp. of America
1720 Fairfield Avenue
Bridgeport, Conn.
EDison 3-3165

See Back Cover

VALVES, AEROSOL (Paint)

Aerosol Research Co.
743 S. Circle Avenue
Forest Park, Ill.
FOrest 6-4880

See Page 3

Emson Research, Inc.
22 Burr Court
Bridgeport, Conn.
EDison 6-2553

See Page 15

Newman-Green, Inc.
507 Interstate Road
Addison, Ill.
TErrace 2-1000

See Page 19

Oil Equipment Laboratories, Inc.
600 Pearl Street
Elizabeth, N. J.
ELizabeth 4-3900

See Page 28

Precision Valve Corp.
700 Nepperhan Avenue
Yonkers 3, N. Y.
YOnkers 9-6500

See Page 34

Risdon Manufacturing Co.
Box 520
Naugatuck, Conn.
PArk 9-8231

SAFCA (France)
7 Rue de Louvre
Paris, France

SAFCA (England)
Milbanke Way
Bracknell, Berkshire, England

Seaquist Manufacturing Corp.
First Street
Cary, Ill.
MEcury 9-7533

Sprayon Products Co.
2075 East 65th Street
Cleveland, O.

See Page 145

Valve Corp. of America
1720 Fairfield Avenue
Bridgeport, Conn.
EDison 3-3165

See Back Cover

VALVES, AEROSOL (One-Shot)

Clayton Corp.
4205 Forest Park Boulevard
St. Louis 8, Mo.
JEfferson 5-6226

See Page 77

Oil Equipment Laboratories, Inc.
600 Pearl Street
Elizabeth, N. J.
ELizabeth 4-3900

See Page 28

A. Schrader's Son
Div. Scovill Mfg. Co., Inc.
470 Vanderbilt Avenue
Brooklyn, N. Y.
NEvins 8-4000

See Page 6

VALVES, AEROSOL (Ultrafine Particle Size)

Aeroprojects, Inc.
310 East Rosedale Avenue
West Chester, Pa.
OWen 6-4710

Thomas J. Mahon, Inc.
75 Brayton Street
Englewood Cliffs, N. J.
LOwell 7-3900

VALVE GASKETS (Rubber)

The Ohio Rubber Co. Division
Eagle Picher Co.
Willoughby, Ohio

See Page 124

VALVE MOUNTING CUPS (With Flowed Gaskets)

Bernardin Bottle Cap Co.
2201 W. Maryland Street
Evansville, Ind.
HArrison 5-6221

Bristol Flowed Gasket Co.
P. O. Box 382
Southington, Conn.

Crown Cork & Seal Co.
Can Division
9300 Ashton Road
Philadelphia 36, Pa.
ORchard 3-5100

See Page 14

Dewey & Almy Chemical Division
W. R. Grace & Co.
62 Whittemore Avenue
Cambridge 40, Mass.

Handy Button Machine Co.
2255 S. Rockwell Street
Chicago 8, Ill.
BIshop 7-7400

Sterling Seal Co.
316 West 16th Street
Erie, Pa.
Glendale 4-1568

New at the aerosol game?

a subscription to *Aerosol Age*, the magazine of pressurized packaging, will keep you informed about technical developments, general news, new patents and trademarks, and other items of interest about this most exciting facet of the packaging field.

Only PLASTIC COATED GLASS containers are recommended for aerosol and .....

Venting

Makes the difference

Only positive controlled venting assures a safe operating coated glass aerosol container.

Only *Wheaton*

offers two methods of positive venting.

1 positive air drilled holes .090 in diameter placed in the bottoms of containers.

Venting by positive perforations facilitates the release of rapidly expanding gas. Rupture of the plastic coating and haphazard penetration by glass fragments is prevented.

Plastic coated glass aerosol containers give you quality packaging for Cosmetic, Pharmaceutical, and Food aerosol products. Long accepted and recognized as the perfect medium for packaging; glass, eliminates your problems of corrosion, compatability and product stability.

A complete range of sizes from quarter ounce to eight ounce are available from stock. Wheaton staff artists and engineers will assist you in creating a distinctive private mold container. Our Aerosol Technicians will assist you in the formulation and development of your product.

2 for cosmetic appearance nearly invisible pin point perforation placed in the sides of a bottle.

WHEATON PLASTIC-COTE CORP.
MILLVILLE, NEW JERSEY

1960 AEROSOL PACKAGE CONTEST

Sponsored by the Aerosol Division,
Chemical Specialties Manufacturers Association

Products may be entered in any of the following categories:

1. *Automotive Products*
2. *Insecticides, Repellents and Moth Proofers*
3. *Room Deodorants*
4. *Paints, Enamels, Other Protective Coatings, and Paint Remover*
5. *Other Houehold Products (snow, polishes, glass cleaner, rug shampoo, water repellents, etc.)*
6. *Shave Products*
7. *Hair Preparations*
8. *Perfumes, Colognes, and Toilet Waters*
9. *Other Personal Products (dentrifices, shampoos, body deodorants, sun tan preparations, etc.)*
10. *Food Products*
11. *Horticultural Products*
12. *Medicinal and Pharmaceutical Products*
13. *Veterinary and Pet Products*
14. *Industrial Products*
15. *Foreign Products*

- All entries will be made in the name of the brand owner or marketer. The product must be on the market and have been *freely offered for sale prior to Sept. 1, 1960.* Contract fillers are urged to enter packages for their customers, but the vendor's name must be on form as required. Entries should be made only with permission of vendor and notification of any award will be sent to the vendor with the name of the individual furnished.
- Entries will close Oct. 15, 1960. All entries sould be sent as soon after Sept. 1, 1960, as possible to the Aerosol Awards Committee at the CSMA office, and should comprise one completely *assembled empty* container with attached tag showing (a) name and address of the brand owner; (b) class in which entry is made by number.
- *One completed entry blank must be sent for each package entered.* Additional entry blanks will be sent promptly on request.
  Counter displays, set up boxes, literature, etc., should not be sent.
- Only *one* entry may be made by any marketer or brand owner in any *one class*, but entries may be made in as many classes as desired by each.
- Entries are open to *any aerosol brand owner or marketer*, anywhere and are *not* restricted to members of CSMA.
- There are no entry fees or other charges to entrants.

Awards will be announced at the 47th annual meeting
of the CSMA, Dec. 5-8

For further information, complete rules, and entry blanks, write to:

CHEMICAL SPECIALTIES MANUFACTURERS ASSOCIATION
AEROSOL AWARDS COMMITTEE
50 East 41st St., 10th Floor, New York 17, N. Y.

CHLORDANE
INSECTICIDE

Chlordane is one of the most versatile insecticide chemicals ever developed. It kills all the most common varieties of indoor "wildlife". It can be used outdoors, too, for insect and crabgrass control.

In addition to its versatility, Chlordane is noted for its outstanding safety record. It has been used safely by millions of people, for over fourteen years. Chlordane also has long lasting effectiveness. Its residual action continues to kill insects that come in contact with it, long after it has been applied.

Versatility, safety, and lasting effectiveness make Chlordane one of the most useful and popular insecticide chemicals ever developed. In 1961, it will be promoted by an extensive program of dealer incentives, and heavy advertising in major media. Advance information on this program is available now, without cost or obligation. As basic manufacturers of Chlordane, our only purpose is to help you sell more of your Chlordane formulations. Mail the coupon and find out how easy it can be!

CHLORDANE
... America's most popular insecticide!

MAIL THIS COUPON TODAY FOR COMPLETE INFORMATION!

VELSICOL

VELSICOL CHEMICAL CORPORATION
330 East Grand Avenue, Chicago 11, Illinois

Gentlemen: Please send me advance information about your Chlordane program for 1961.

Name_____

Store_____

Address_____

City_____ Zone_____ State_____

The Perfect Container doesn't Just Happen!

You can't blame Baby Kangaroo for being hopped up about his mother's container. Crib, carriage and nursery all in one, the Kangaroo's pouch is certainly a container that does what it is supposed to do . . . best!

In the dynamic aerosol industry Canco containers do what they are supposed to do . . . best! Today, Canco offers aerosol packers broad technical experience and a complete selection of metal containers. You can be sure that the great pressure containers to come will come from Canco.

To increase your sales and profits, put Canco's aggressive team of research, manufacturing and marketing experts to work on your aerosol packaging problems.

GREAT CONTAINER IDEAS COME FROM CANCO

CANCO DIVISION
AMERICAN CAN COMPANY

REFLECTED IN A RUBY'S LUSTER..... HOW NORDA MAKES GOOD SCENTS

You can see a ruby is worth the trouble to make every facet true. People prize the flawless gem most of all.

Norda never forgets that when making scents for you. Each one that comes from Norda must be true, with never an imperfection, carefully shaped from the finest of Nature's materials.

Being a perfectionist has its rewards. Ask any Norda user.

Norda®

Norda makes good scents

Samples, free, by sending your business letterhead to
NORDA, 601 W. 26th St., New York 1, N. Y. • Chicago • Los Angeles • San Francisco • Toronto • Montreal • Havana • London • Paris • Grasse • Mexico City

EDITORIALS

This Year's Buyer's Guide . . .

THIS marks the fourth year of the *Aerosol Age* Buyer's Guide, and for the fourth time the guide has been given a number of refinements to more accurately bring it up to date with current industry developments. This guide, for instance, has eliminated the categories of "Argon Propellants" and "Gas Chromatographs," the first because it hasn't yet attained its hoped-for potential, and the second because it is a too highly specialized category of interest only to the research directors of the major filling companies. Foods and paints have been given added stature by the inclusion of new categories and the "Pharmaceutical Raw Material" section has been reorganized and "beefed up."

To add to the accuracy of the established listings, trade association listings and other primary sources have been rechecked. New letters of inquiry were sent to all those companies who were even suspected of offering some product or service to the aerosol field. Once again, we list only *primary* suppliers (at the cost of eliminating legitimate branch offices, sales representatives, and other secondary sources).

But as with the previous three guides, there remains the chance that some supplier may have been inadvertently omitted. The chance of this happening though remote, is perhaps increased by the aerosol industry's usual negligence in answering correspondence, coupled with the often grossly inaccurate supplier listings in other packaging periodicals. But perhaps the most difficult factor with which the editors of this magazine have to contend is the unfortunate fact that every year a number of smaller companies come into existence, but then "fade away" quickly—sometimes before the publication of the next year's buyer's guide.

Whither the Custom Filler . . .

DURING the past month or so, the editors of this magazine have come into fairly close touch with most of the major suppliers. A number have expressed concern for the future well-being of the larger custom fillers, many of whom have recently lost major accounts of marketers who have installed captive production lines. These suppliers — most of whom sell just as much to the marketers, but who appear to have a definite interest in the health of their more skilled filler customers — venture the opinion that perhaps the fillers' emphasis on new product development is misplaced. They reason that the major marketers of food, pharmaceuticals, and even chemical specialties have the specialized knowledge and technical experience with their particular products, which cannot be matched by the laboratory of the custom filler —no matter how skilled he is in aerosol technology.

These suppliers (whose opinions we do not necessarily agree with one hundred percent) suggest that the emphasis of the filler should be switched to *sales* and *improved production techniques*. Most filling companies, they argue, are over-staffed in their research departments, but decidedly understaffed in sales. Too often the chief executive of the company is also the chief salesman, and his sales assistants (*if any*) are given too little help and encouragement in "beating the bushes" to bring in new accounts.

Another shortcoming suggested in these same discussions has to do with production techniques. More-or-less by reason of default, straight-line

(*Continued on Page* 145)

This article, first of a series of three, begins what will likely be recognized as the most complete and most informative work ever written on this important subject.

The Technical Aspects of Aerosol Air Fresheners

Preface

The aerosol air freshener has undergone a marked transition during the last decade, as it has grown from an almost purely descriptive branch of pressure packaging to one in which many of the modern developments of physics and chemistry find application.

Unfortunately, a brief survey of this field from a purely critical point of view does not satisfy all the needs of the research man, No articles have yet appeared which are more than just a few pages in length. In the topics presented in this paper, the reader will find many problems worthy of the serious attention of research workers in both pure and applied aerosol science. Further, the reader should gain from the topics discussed a feeling for the present state of knowledge, and an appreciation of what has been accomplished in the past and what may reasonably be anticipated in the future.

References to the literature are frequent, but are not to be regarded as complete or exhaustive. Coverage extends to Sept. 1, 1960.

Finally, the author gratefully acknowledges the assistance of research workers at this laboratory for the collection of original material and proof-reading the manuscript.

MAN'S fight to control environmental odors began with the dawn of civilization. Many records attest to the burning of incense, perfumed candles, and fragrant oils in ancient Egypt. The Chinese developed the art of creating pleasant scents by evaporating perfumes from a saturated wick. Spices, especially the sassafras varieties, were widely used in the East to stultify human response to putrescent odors encountered on foods and in living quarters. The idea of saturating bags of wool or sawdust with certain aromatics and hanging them in rooms is said to have originated in Southern Europe. This method was an effective one, although rather slow acting, and it found wide acceptance in the 18th and 19th centuries. It persists even today in the form of sachets for scenting closets and drawers.

Perhaps the most famous of all the early methods for odor control was the perfume spray produced from an

atomizer. By this means, unpleasant odors could be banished quickly and easily, thereby providing a great advantage over other methods. The main difficulty with the atomizer was its inefficiency. Many perfumed particles were so large that they settled out too rapidly to be of much use, and they also caused stains and background odors which were very persistent. When higher concentrations of perfume were used to increase odor control, many of these faults were simply accentuated. In some cases the perfume solvent was changed from water and alcohol to an alcohol-ether mixture. This increased the volatility of the spray and gave finer particles, but these assets were largely minimized by a host of additional problems caused by the use of ether. As a final point, it should be noted that the perfumes of earlier days were compounded more for olfactory harmony than for their end use. They were often so sensitive to air that atomizers filled with fresh cologne could be used only a few times before antagonistic odors became overpowering.

The technique of supplying an interruptable flow of compressed gas to an atomizer is not difficult to visualize. Some work along these lines was done as early as 1857 by Smythe[1]. A short while later an anonymous French inventor showed that ethyl chloride could be dispensed from a self-pressurized tube to cool the skin and cleanse air. Helbing & Pertsch[2] refined this work. In 1902, R. W. Moore[3] used carbon dioxide to atomize perfume solutions from an aerosol dispenser. Biginelli[4] greatly expanded Moore's work and showed that certain materials act to *decrease* the pressure of propellants, and that particle size is a function of the propellant concentration in the liquid.

The great Norwegian scientist Rotheim[5] described aerosols composed of perfume and alkyl chloride propellants in 1933 and envisaged their use as air fresheners. Rothiem's prediction took 20 years to come true. Technological advances in containers, valves and propellants all had to take place *before* the aerosol air freshener could make its debut as an important new product.

The first low-pressure aerosol cans were made by the Crown Cork & Seal Co. in 1947, and in the following year the Bridgeport Brass Co. introduced a commercial air freshener under the brand-name "Good-Aire." The instant success of "Good-Aire" inspired other firms to offer similar products. Early entries in the field were made by Boyle-Midway Division, Rex Research Corp. ("Rex Deodorizer"); B. T. Babbitt, Inc. ("Air-Gene"); Gulf Oil Co. ("Gulfspray Deodorant"), and Lever Bros. ("Air Wick Mist")[6]. The Colgate Palmolive Co. introduced "Florient" in 1953, and "Glade" was brought out by S. C. Johnson & Sons about four years later. Today there are at least 200 to 300 brand names of aerosol air fresheners on the market!

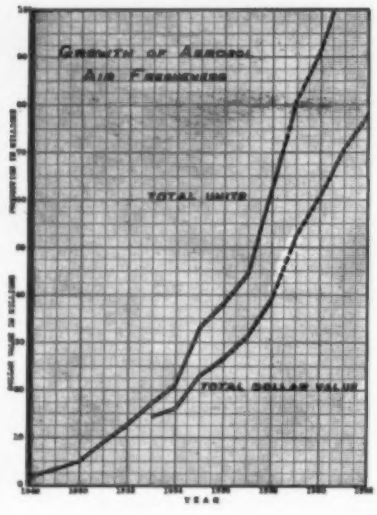
The sales of air fresheners were so greatly stimulated by the advertising efforts and widespread distribution of these major marketers that they rose from less than 2 million in 1948 to an estimated 81 million in 1959. They have now captured about 84% of their entire market, with dollar sales rising to over $50 million in the year just ended[7,8]. The fact that air fresheners account for a steady 14% of all non-food aerosol production has inspired the paraphrase: "As room deodorants go, so goes the industry." Fortunately, both have a long way to go! In 1958 air fresheners had been purchased by only 39% of American households[9], illustrating that the market is still far from saturated.

Although there are few doubts about consumer acceptance of air fresheners, there are some serious ones as to how they work to combat odors. Their action is very complicated indeed. Technically, they may be said to reduce the effect of malodorous substances via some weighted composite of a number of physical and chemical mechanisms. These activities take place in the air and sometimes also on exposed surfaces. We know that the result is detected by both the olfactory mucosa and taste cells; where the sensory image is developed and sent to the brain for interpretation.

By Montfort A. Johnsen
Director of Research
Peterson Filling & Packaging Co.
Danville, Ill.

A LARGE number of odorous materials can exist in air, and our reception to many of them is quite unpleasant. Since most noxious vapors are composed of volatile compounds where an element is functioning at a lower valency state, it can be assumed that many of them will be unstable in the presence of air and moisture. This is quite true. Some of the carbylamines and higher nitrogen compounds have such short half-lives that "they stand," Wieland[11] says, "on the edge of existence." The offensive odor of these substances may well result from their "death by hydrolysis" on the surface of moist olfactory glands. These ideas recall the classic question as to whether the pungent odor of sulfur dioxide might not more accurately be referred to as that of hydrated sulfurous acid.

The sensitivity range of the human olfactory apparatus is astonishing. Certain thiols can be detected down to 2×10^{-12} gm.[12] The unforgettable stench of methyl selenol (that of putrescent horseradish) is said to have a minimum identifiable odor threshold of as low as 10^{-14} gm. for persons chronically sensitized to it because of a history of selenium poisoning. On the other hand, triphenyl-



amine, one of the substances found in decaying fish, requires concentrations millions of times as high as these in order to be detected!

These wide variations in stability and detectable concentration have made it impossible to analyze complex air-borne odors until recently. The new advances in this direction have depended first upon the use of gas chromatography as a tool for the separation of components, followed by passage of the constituents through either an ionization detector[13,14] or an analytical mass spectrometer[14] for identification and analysis at the very low concentration levels that are usually found. These detection instruments are useful down to 10^{-14} mole of odor. In practice, the chromatographic system is operated under reduced pressure to lessen the chance of "artifact" formation, due to interaction of the original components in the mixture.

In order to be perceived, an odorous material must gain access to the olfactory nerves by passing first through a film of moisture and then through a layer of lipoid fat. It must then excite the nerve by some means (probably chemical) to make its presence known. This mechanism explains many things. In addition to being volatile, an odor must be reactive, and soluble in both water and fats. These points are illustrated by the observation that butyric acid has a stronger smell than acetic acid, and the higher homologues of the series have no odor at all. Moisture in air is said to accentuate odors, probably by a reduction of the surface tension and similar phenomena which act as barriers to gas sorbtion by water films. Hot odors are always smelled more intensely due to the greater reactivity and solubility that heating imparts to chemicals.

Most odorous substances contain either oxygen, nitrogen, sulfur, phosphorus or the halogens; elements which are characterized by having one or more unshared electron pairs. They may be thought of as being intra-atomically unsaturated. Other odors are molecularly unsaturated, such as those with multiple bonds. These centers of unsaturation, often called osmophoric areas, characterize the aroma of the molecule[10]. Phosphorous and arsenical odors are described as alliaceous, and the haloid smell needs no further definition.

Origin of Odors

The odor imparted to otherwise bland chemicals by trace amounts of impurities is a matter of great importance to industry. Many low-grade hydrocarbon products are fouled by tiny quantities of thiols, thioethers and similar sulfur compounds. When certain hydrocarbons are distilled in glass, they develop an acrid, pyrolytic odor. Partial oxidation may create odors, such as when ethanol is heated in air and a small amount of acetaldehyde is formed. Trained persons can often detect traces of arsenic in impure glycols by odor testing. As a matter of record, more industrial chemicals are rejected on the basis of odor alone than for all other causes combined[16].

Odor is an even greater problem with the natural products: foods, beverages, tobacco and comparable items, where control methods must operate *within certain limitations*. The constitution of these materials, which is immensely complex to begin with, is subject to variations according to source, time of the year, processing methods and similar things. Many food odors arise as a result of bacterial activity. Enzyme degradation may also be important. Many odors normally associated with decay are also generated when foods are cooked, although generally in small amounts. Fish products release ammonia, the simple amines and many highly offensive indoles, such as skatole. Dairy products give off butyric and caproic acids, as well as a host of related acids and aldehydes. Vegetables produce a variety of thioethers and thioamides which, in some cases, have defied analysis due to their instability. In the case of tobacco, completely different empyreumatic or burning-type odors are generated, depending upon how hotly the tobacco burns. When air is drawn through the tobacco, combustion is more complete, resulting in less tar and aldehyde formation and a general decrease in odor.

The average home is literally teeming with odoriferous materials. Some are very pleasant and some are definitely not. Aside from the kitchen odors and those from tobacco smoke, various smells come from heating units, bathrooms, medicine cabinets and cleaning preparations. Human perspiration is an important source of odor in that it contains ureas and many other nitrogen compounds. One of the most famous odors is that of bad breath. Although both perspiration and bad breath are looked upon as personal odors, they contribute *more* to domestic smells than is generally realized.

Physicians have shown that the odorous content of the breath and perspiration may be used to indicate many things concerning the health and recent activities of a patient. Normal breath has the musty-sweet scent of a few simple thioethers which are formed in the mouth and lungs by the action of bacteria. When nitrogen odors appear on the breath, they usually signify the recent use of tobacco products, certain types of nervous tension, or sometimes physical exertion. Several health problems are characterized by the appearance of an ethereal nitrite odor on the breath.

Everyone recognizes the smells associated with alcoholic beverages.

The laboratory of Peterson Filling & Packaging Co-, in which the author does his research

Very recently it has even been possible to distinguish between different brands of whiskey by analyzing the odors they impart to the breath. The secret lies in the quantitative determination of acetaldehyde, ethanol, diacetal, higher aldehydes and other volatile substances, using some of the newer instrumental techniques[13].

Coffee has been found to contain a large number of odorous chemicals, and it is reasonable to anticipate that some of them, such as acetone, diacetal, n-valeraldehyde and the furans, will be present on the breath of coffee-drinkers.

A large amount of basic research has been done to try and reduce the odors of offensive breath. The products that are now sold to sweeten the breath are a tribute to the success of these programs. Spearmint, caraway and the amyl-ester (juicy-fruit) compounds are good for controlling tobacco aromas. Certain broad spectrum chemicals, such as copper (II) gluconate and the chlorophyllins, are said to actually destroy most bad breath odors.

Physiological Effects of Odors

It is a commonly held belief that noxious odors cause symptoms of nausea and distress by lowering the oxygen content of the air. This idea has been shown to be quite untrue[17] (except for persons suffering from a few such rare diseases as anatoxia). The concentration of most household odors falls into the range of from 1 to 120 ppm. by volume in air. This is hardly enough for asphyxiation, although it is sufficient for a few highly poisonous gases to work their ill effects. As a rule, the enervating action of stale air is due to the sorbtion of odorants through the walls of the lungs and into the bloodstream. Once in the blood, these chemicals cause a symptomatic nervous reflex which results in vasoconstriction. With the veins and arteries so tightened down to the point that normal circulation is impeded, the oxygen-carbon dioxide interchanges of cellular respiration are also impeded, and the overall effect is one of oxygen starvation in mild form.

The refreshing action of mint and bergamot fragrances is said to be especially noticeable in areas already fouled with stale air. These essential oils are, of course, members of the terpene family, a group of chemicals known to act as vasodilators. They are powerful enough to cancel the effect of stale air on the body by their ability to create an antagonistic stimulus which overcomes the constrictive action and thus permits a resumption of normal circulation.

A few very powerful odorants create nausea by psychological means. This appears to involve the creation of an extremely displeasing sensory image within the brain as a result of the action of the odorant upon the senses of smell and taste. The images may or may not recall specific situations where similar odors were experienced and remembered. The only sure way for control is to destroy or modify the odor chemically so that the sensory impression is reduced to a subconscious level.

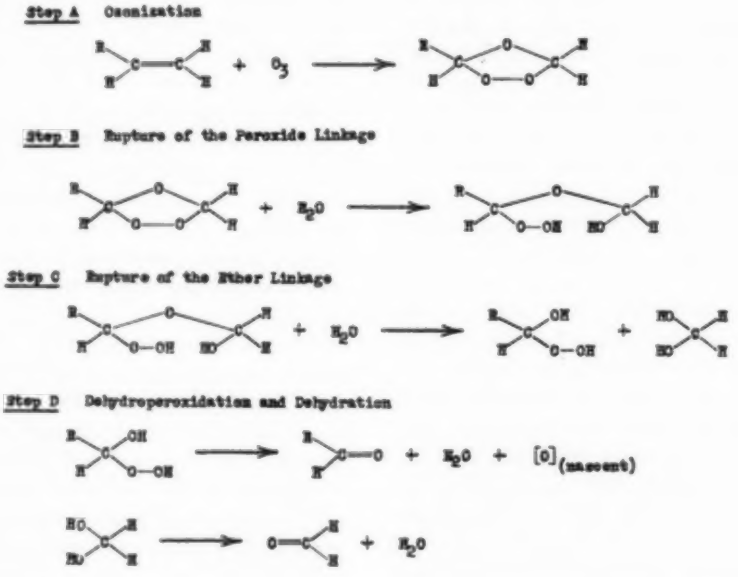
Principles of Deodorization

Because odors are usually composed of substances which contain unsaturated or low valency osmophoric centers, the simplest method for destroying them is by oxidation. Fire has been the oldest way for the elimination of odor. It is also one of the most efficient, provided the flames are hot enough to ensure complete oxidation. The most widespread

natural oxidant, and the one next in importance to man, is ozone. Raw ozone, formed in the atmosphere by radiation, is the primary chemical used by nature to reduce or destroy stenches. Except for the fact that ozone is irritating and even somewhat poisonous at concentrations above about 30 ppb. in air, there would be little need for other deodorants. The gas actually shows considerable solubility in certain halocarbons, and it would be nice to be able to utilize this property in the preparation of aerosol air fresheners. Even at 30 ppb., ozone has been shown to have a pronounced deodorizing effect[18,19].

Ozone reacts with odors in several ways. It oxidizes thiols first to disulfides, and then splits them into higher valency sulfur compounds. Thioethers are changed to sulfones and finally to sulfoxides[20] which are inert and odorless. Peroxides[24], formic acid[21] and many other compounds are oxidized by means of a chain reaction mechanism. Ozone does not react with ammonia or with the simple amines.

Perhaps the most curious reactions of ozone are those which occur with unsaturated compounds. The first step involves the simple addition of ozone across the double bond which produces the colorless to deep green ozonides. The ozonides are usually rather volatile liquids which have an exceedingly penetrating odor. The simple ones are quite unstable, decomposing spontaneously into carbonyl fragments[23]. This is the case with ethylene ozonide, which splits to give formaldehyde and formic acid, the reaction occurring with explosive violence. More complex ozonides may be decomposed by hydrolysis[22], with rupture of the chain taking place at the unsaturated position. The total reaction takes several steps and can be illustrated by the following general scheme:


Step A Ozonization
Step B Rupture of the Peroxide Linkage
Step C Rupture of the Ether Linkage
Step D Dehydroperoxidation and Dehydration
(nascent)

The few kinetic studies that have been made indicate that the true reactions are more complicated than is shown by steps C and D, but there is no need to enter into a more rigorous treatment of this topic. It is significant that the ozonides can be stabilized to water by the same inhibitors that protect peroxides.[25] Five percent aqueous solutions of olive oil ozonide have been prepared, for instance, and they show a surprising ability to eliminate bad odors, kill bacteria, and sterilize virus[26], at the same time being non-injurious to the skin.

The ozonides kill odors nearly as effectively as ozone itself, yet they can be tolerated in far greater concentration without causing the irritation, pulmonary edema and other ill effects associated with the parent compound. A few ozonides have been used as the deodorizing principle of aerosol air fresheners. For best results only about 0.5% should be used, with water and alcohols being excluded from the formulation. The perfume mask must be carefully selected for compatibility with the ozonide. Peroxides and hydroperoxides are also used for odor control. Many essential oils, such as geraniol, contain a certain amount of peroxide, and the amount can be increased by special processing methods. Although the scent of these oils then becomes rather harsh and penetrating (like the ozonides, but less powerful) they will function as excellent deodorizers[28].

A few organic hydroperoxides and their metallic salts have been suggested for use in the pure form at concentrations up to 0.5% of the aerosol formulation[29]. Typical compounds mentioned in this connection are cumene hydroperoxide, p-cymene hydroperoxide, tert, butyl hydroperoxide and potassium peroxycyclopentane. These deodorants are quite stable in a system composed of halocarbon diluents and propellants. Perfumes are suggested, but they should be chosen with care.

The most vigorous hydroperoxide of all is peracetic acid. This potent liquid, also called acetyl hydroperoxide, cannot exist alone, but must be stabilized by the inclusion of acetic acid, hydrogen peroxide and water to form an equilibrium system. Although dilute solutions of peracetic acid have been used as an aerosol deodorant and sterilant[30], certain stability problems must be solved before widespread acceptance can be achieved.

Little work appears to have been done on the use of ethylene oxide and its milder homologues for aerosol deodorants. This is at least partly due to their *hazardous characteristics*.

Both ethylene oxide and propylene oxide are used in pressurized form for sterilizing applications; the suggested compositions being about 12% oxide and 88% dichlorodifluoromethane[31].

Aliphatic Aldehydes as Deodorants

A few labile aldehydes have been used successfully as aerosol deodorizing principals. The oxygen atom in the aldehyde group shows a high degree of activity. That the carbonyl bond has a fair amount of ionic character can be shown by experiments which demonstrate a rapid interchange between the carbonyl oxygen and tagged carbonyl oxygen isotopes carried in similar aldehydes. Above about 25 ppm. in air, vapors of the aliphatic aldehydes exert both an irritating and sensitizing action upon the upper respiratory system. These effects are reduced when the molecular complexity reaches about C_{12}, as with lauraldehyde and methyl n-nonylacetaldehyde.

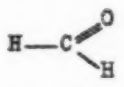
Aliphatic aldehydes in the intermediate range have been used for many years for industrial odor control[104]. Although they are readily derived from natural materials, they do not occur in nature because of their reactivity. Within this rather extensive family of aldehydes and substituted aldehydes there are a few which, because of their special properties, qualify as true aerosol deodorants. They have sometimes been described as the "sophisticated" aldehydes[105], and are astonishingly effective.[122]

In addition to the basic requirement that a sophisticated aldehyde possess odor cancelling ability, it must be compatible with the deodorant formula and must not produce objectionable or highly charactertistic effects when sprayed into the air. The The C_4, C_5 and C_6 aldehydes cannot be used because of the disagreeable, cough-provoking property they impart. In addition, they readily oxidize to the corresponding acids, which have nauseating stenches even at 1 ppm. or less. Aldehydes of C_7, C_8 and C_9 complexity have characteristic, penetrating fatty odors that argue against their use in aerosols, although the C_9 members may be used if the alkyl chain is sufficiently branched. When C_{10} is reached, the pungent odor begins to subside and the first signs of an intensely green citrus and citrus-pine by-note make their appearance. These desirable fragrances may be accentuated by operating on the alkyl group. Placing a double bond conjugate to the aldehyde group gives rise to the series known as the leaf aldehydes, which posses a penetrating leafy-green odor. Locating the double bond at the far end of the alkyl group serves to embellish the citrus note. Many other changes are possible, while still retaining deodorant properties. The addition of a hydroxy group to a C_{10} aldehyde gives hydroxycitronellal, whose lily-of-the-valley fragrance is synonymous with olfactory cleanliness.

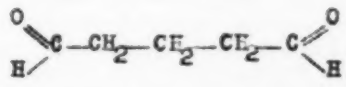
The simplest aldehyde, formaldehyde, has deodorizing properties which set it apart from the lower members of the aliphatic aldehyde series. These attributes have long been recognized. One interesting early contrivance made it possible to slowly generate formaldehyde from a strong solution of alkaline permanganate by the addition of methanol[32]. Formaldehyde is very active. It combines with ammonia on contact to give odorless methylols, and is usually effective against sulfide compounds by means

(Continued on Page 135)

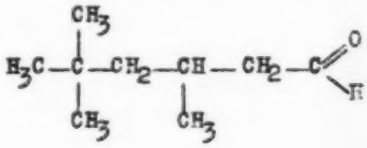
CLASSICAL STRUCTURES FOR SELECTED ALDEHYDE DEODORANTS



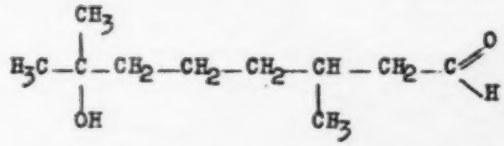
Formaldehyde



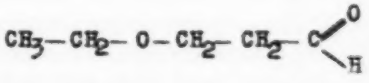
Glutaraldehyde



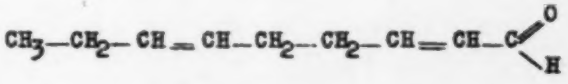
3,5,5-Trimethylhexanal



2,6-Dimethyl-2-hydroxyoctanal-8 (Hydroxycitronellal)



β-ethoxy-propionaldehyde



2,6-Nonadien-1-al (Violet Leaf Aldehyde)

TOXIC NEW AEROSOL PRODUCT SOLVES PAPER MAKING PROBLEM

RELATIVELY unnoticed by the marketers of colognes, cosmetics, pharmaceuticals, foods and other "glamour" products in the aerosol industry, industrial aerosols have been making real progress. Along with the now well-known mold releases, stencil paints, metallic sprays, anti-static and rubber sprays, there are such highly interesting products as "Metasol," a product of the Metalsalts Corp., Hawthorne, N. J.

This admittedly very specialized product, dispensed from large, heavy propane-type containers and requiring safety gear to apply, is aimed at preventing the growth of micro-organisms (bacteria, fungi and algae) on the working surfaces of industrial plants. First, and so far most promising use for the product, is in paper mills.

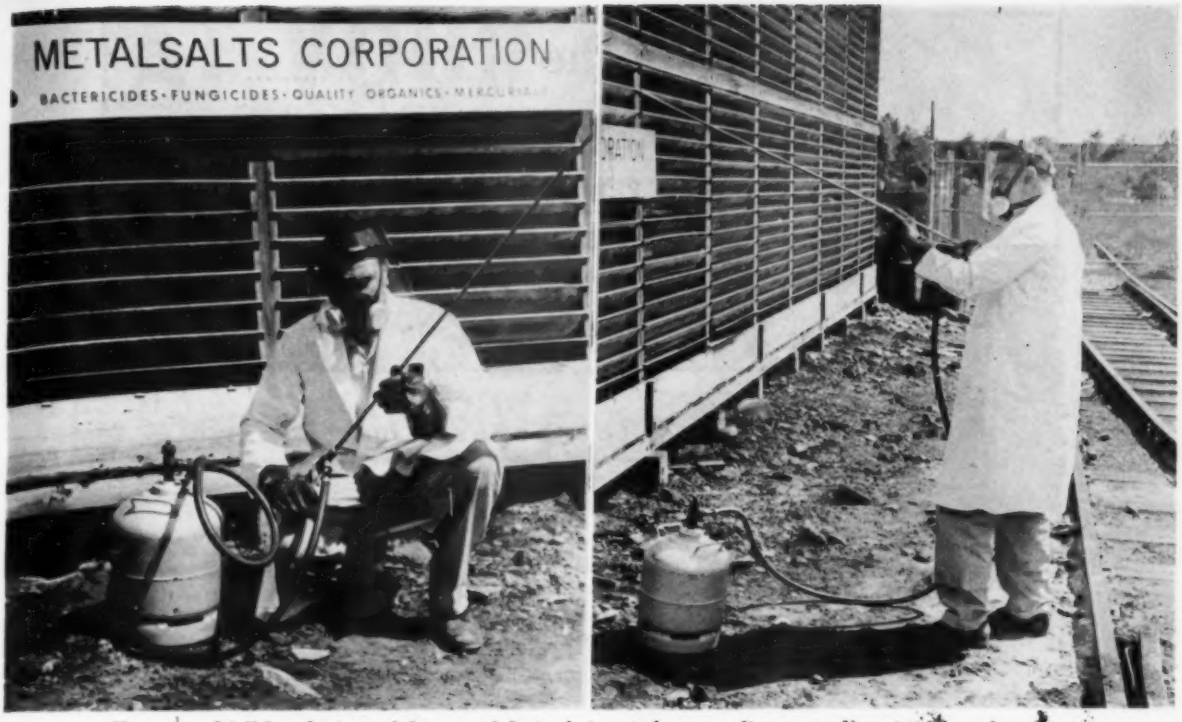
In the manufacture of paper the liberation of nutrients from the woody raw material by physical and chemical means — together with the addition of such favorable growth factors as glues and organic coatings — tend to promote heavy bacterial growth. Normally this occurs in such varied paper-making equipment as storage chests, fourdrinier wire and couch pits, save-alls, head boxes, suction boxes, pipelines, doctor blades, etc. On the surfaces of this equipment the micro-organisms form a sticky, tenacious coating to which cellulose fibers, clays and other fillers (as well as the dyes and coatings used in paper production) readily adhere. These "mats" tend periodically to break free from the working surfaces, float off with the recirculated white water and cause tears, rejection of finished paper because of flaws, shut-downs for frequent housecleaning and other costly operations.

Metalsalts Corp. is a leading U. S. manufacturer of organic and inorganic mercury salts, refined metallic mercury and organic intermediates. Its Metasol Division develops and sells these materials for use as bactericides and fungicides, and it was this division that did the experimental work which resulted in development of the new aerosol spray. Major work on the project was done by Dr. Nathaniel Grier, research director, and Dr. S. J. Lederer, technical director.

Metalsalts' aerosol device is examined by Bard Brown, "Genetron" sales representative; Dr. Nathaniel Grier, the company's research director; D. M. Waite, sales manager; J. Houston, associate chemist; and Dr. S. J. Lederer, technical director.

CALLED "Metasol K-Spray," its chief ingredient is a unique organomercury compound, synthesized and selected after exhaustive tests and screening, which acts as an antimicrobial. The formulation also contains a tough, transparent film forming resin, plus "Genetron 12" as the propellant. The resins are important because the material, when sprayed on wood, metal, plastic, cement or ceramic surfaces, prevents the growth of micro-organisms for periods as long as 12 months after application.

The organomercury compounds are toxic to humans, which necessitates the use of safety equipment for the applicator. This equipment consists of rubber gloves, face shield and respiratory mask, together with



Close-up and full length views of the aerosol device being used on a cooling tower. Note special equipment.

a uniform that covers all exposed body areas. According to D. M. Waite, sales manager for the Metasol Division, "Although the need for such precautions may imply resistance to use by factory personnel, demonstration has resulted in complete acceptance of the product and the necessary safeguards."

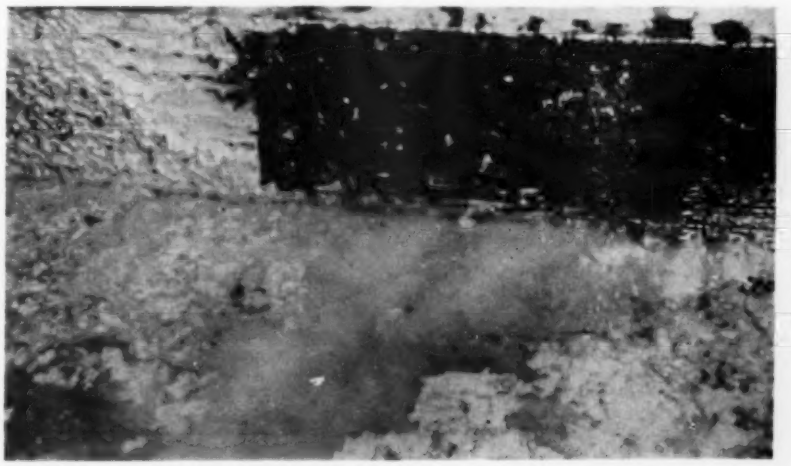
Dr. Grier suggests that the toxicity of the material was one of the prime motivating factors in the decision to formulate it as an aerosol. He points out that brushing it on would have been extremely tricky because of the time and exposure to operator involved. He admits that probably the major determinant, however, had been the fact that the paper-making equipment offers a vast amount of inaccessible areas (most of them affected by slime growth), which could be reached only by a specially designed gun and aerosol spray.

Dr. Grier explains that the company's research department conceived the idea of formulating the product as an aerosol "almost from scratch." Because of the highly toxic nature of the ingredients, he says, the company was able to take very little advantage of existing literature or industry sources (except for the advice of the "Genetron" research group at the General Chemical Division of Allied Chemical Corp.). Such problems as possible corrosion, valve and gun construction, and filling techniques had to be pioneered by the company's research staff. Currently the product is being cold filled on a semi-automatic line in the company's own plant.

Initial field trials with the Metasol product were run in newsprint manufacturing mills located in Canada and in several areas of the United States. In order to give the material the optimum performance tests, plant equipment and areas selected for spraying were those considered the most troublesome in terms of slime collection and formation. On shutdown and clean-up these areas were sprayed at the recommended rate of

(*Continued on Page* 143)

Close-up of paper-making equipment. Dark area, clean wood was sprayed with "Metasol K-Spray," is clean of bacteriological growth and resin accumulation.



the HAZARDOUS SUBSTANCES LABELING LAW

and the aerosol marketer

By Robert Ackerly
Cummings, Sellers, Reeves & Conner*
Washington, D. C.

ON JULY 12 of this year the President signed Public Law 86-613, the Federal Hazardous Substances Labeling Law. This Law became effective immediately, although no penalty or condemnation can be enforced for any violation for six months after the date of enactment. The Secretary of Health, Education and Welfare is given authority in the Law to extend the effective date of the Act for an additional twelve month period on the basis of a finding that conditions exist which necessitate additional time. It is anticipated that the Act will be effective for all purposes on January 12, 1961 unless applications for an extension of time for specific hazardous substances or packages are filed with the Secretary prior to that date.

The Secretary is given authority by this Law to issue regulations specifying those hazardous substances which he finds are within the definitions in the Act. However, since the Act is fully effective without additional regulations, every marketer of products for household use should examine the provisions of this Law and evaluate its effect on his products. It is premature to anticipate the type of regulations that will be issued for the enforcement of this Law. However, there are several features of the Law, of particular interest to aerosol marketers, which can be examined in anticipation of the effective date of the penalty provisions of the Law.

The term "hazardous substance" is defined in the Law as follows:

> (f) The term "hazardous substance" means:
>
> 1. (A) Any substance or mixture of substances which (i) is toxic, (ii) is corrosive, (iii) is an irritant, (iv) is a strong sensitizer, (v) is flammable, or (vi) generates pressure through decomposition, heat, or other means, if such substance or mixture of substances may cause substantial personal injury or substantial illness during or as a proximate result of any customary or reasonably foreseeable handling or use, including reasonably foreseeable ingestion by children.
>
> (B) Any substances which the Secretary by regulation finds, pursuant to the provisions of section 3 (a), meet the requirements of subparagraph 1 (A) of this paragraph.
>
> (C) Any radioactive substance, if, with respect to such substance as used in a particular class of article or as packaged, the Secretary determines by regulations that the substance is sufficiently hazardous to require labeling in accordance with this Act in order to protect the public health.
>
> 2. The term "hazardous substance" shall not apply to economic poisons subject to the Federal Insecticide, Fungicide, and Rodenticide Act, nor to foods, drugs and cosmetics subject to the Federal Food, Drug, and Cosmetic Act, nor to substances intended for use as fuels when stored in containers and used in the heating, cooking, or refrigeration system of a house.
>
> 3. The term "hazardous substance" shall not include any source material, special nuclear material, or by-product material as defined in the Atomic Energy Act of 1954, as amended, and regulations issued pursuant thereto by the Atomic Energy Commission.

The Act further defines in Section 2 (p) a "misbranded package" as a container intended or suitable for household use which fails to bear a label.

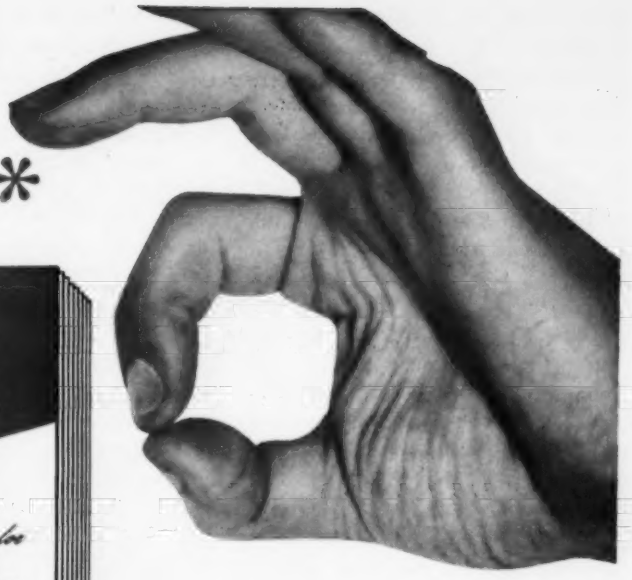
> (1) which states conspicuously (A) the name and place of business of the manufacturer, packer, distributor or seller; (B) the common or usual name or the chemical name (if there be no common or usual name) of the hazardous substance or of each component which contributes substantially to its hazard, unless the Secretary by regulation permits or requires the use of a recognized generic name; (C) the signal word "DANGER" on substances which are extremely flammable, corrosive, or highly toxic; (D) the signal word "WARNING" or "CAUTION" on all other hazardous substances; (E) an affirmative statement of the principal hazard or hazards, such as "Flammable," "Vapor Harmful," "Causes Burns," "Absorbed Through Skin," or similar wording descriptive of the hazard; (F) precautionary measures describing the action to be followed or avoided, except when modified by regulation of the Secretary pursuant to section 3; (G) instruction, when necessary or appropriate, for first-aid treatment; (H) the word "poison" for any hazardous substance which is defined as "highly toxic" by subsection (h); (I) instructions for handling and storage of packages which require special care in handling or storage; and (J) the statement "Keep out of the reach of children," or its practical equivalent, and
>
> (2) on which any statements required under subparagraph (1) of this paragraph are located prominently and are in the English language in conspicuous and legible type in contrast by typography, layout, or color with other printed matter on the label.

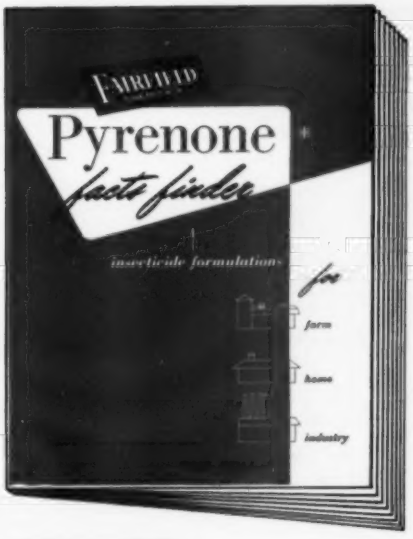
In Section 2 (l) of the Act the Secretary is authorized to establish

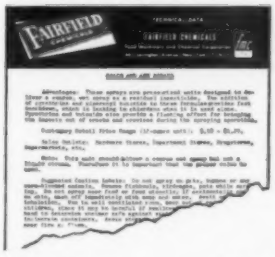
---

* Cummings, Sellers, Reeves & Conner is the counsel of the Chemical Specialties Manufacturers Association, and has had wide experience with legislative problems dealing with chemical specialties and household products.

AT YOUR FINGER TIPS*







a library of vital technical data to guide insecticide formulators, manufacturers, PCO's and sanitarians.

Designed to aid makers of pesticides in virtually every area of application . . . in the home, food handling and processing, grain storage, post-harvest, dairy, livestock and aerosols, etc.

Included are fool-proof, use-proven basic formulations that contain Pyrenone†, Fairfield's own non-toxic piperonyl butoxide and pyrethrin insecticide base.

Here is a partial list of Fairfield technical aids to help you "tailor make" *a more effective, more economical, more profitable product.*

- ☐ House & Garden Products
- ☐ Dairy Sprays
- ☐ Residual Concentrate
- ☐ Aerosols & Pressurized Insecticides
- ☐ Fly Repellent Combinations
- ☐ Industrial Type Aerosols

* *Ask your Fairfield representative for these and other aids, or write.*

†*Reg. U.S. Pat. Off. FMC*

Putting Ideas to Work

FOOD MACHINERY AND CHEMICAL CORPORATION

Fairfield Chemicals

Sales Headquarters

441 LEXINGTON AVENUE, NEW YORK 17, N.Y.

Branches in principal cities. In Canada: Natural Products Corporation, Montreal and Toronto.

fmc
FOOD MACHINERY AND CHEMICAL CORPORATION

methods for determining the flammability of the contents of self-pressurized containers in accordance with methods found by him to be generally applicable to such materials or containers.

Each product which is intended or suitable for household use, therefore, *must* be evaluated to determine whether it is a hazardous substance within the meaning of this Act. If the product is within one of the six categories of hazard stated in the definition, then a determination must be made as to whether the product may cause substantial personal injury or substantial illness during or as a proximate result of any customary or reasonably foreseeable handling or use, including reasonably foreseeable ingestion by children. It is necessary, therefore, to evaluate the hazard under conditions of anticipated use. These hazards may be different when dispensed from an aerosol container than when used in a liquid or solid form. For example, the Court of Appeals in the State of Maryland this year indicated in a product liability case, that trichloroethane may expose the user to a greater hazard when dispensed in a spray or mist then when used in the liquid form. In this case the user complained that a hepatitis condition was caused by inhalation of the spray. While the hazard of some products may, therefore, be increased by reason of being dispensed in a mist or spray, other hazards, such as the ingestion hazard, may be decreased by reason of its being packaged in a sealed aerosol container.

Determinations of flammability must await regulations of the Secretary. In the meantime, this hazard may be evaluated in accordance with the regulations adopted in the State of Connecticut for determining the flammability of the contents of self-pressurized containers.

This Law requires a label statement of instructions for handling and storage of packages which require special care in handling or storage. The Department of Health, Education and Welfare has issued a statement requiring a warning on aerosols containing drugs with respect to the hazard from the exposure of a self-pressurized container to excessive heat or incineration. The Chemical Specialties Manufacturers Association has recommended a statement along the following lines for pressurized containers.

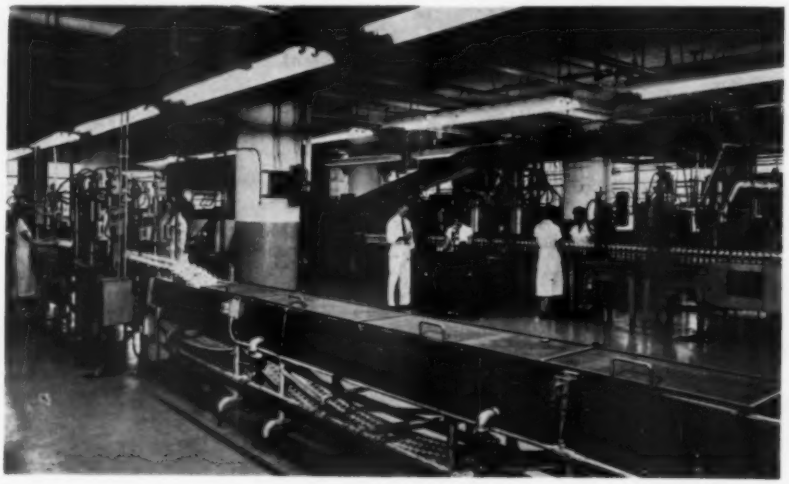
> Warning—Contents under Pressure
> Exposure to Heat May Cause Bursting
> Avoid Prolonged Exposure to Direct Sunlight
> Do Not Puncture or Incinerate

It is anticipated that a warning statement similar to the foregoing will be required with respect to the handling and storage of self-pressurized containers.

The Secretary of Health, Education and Welfare is authorized in Section 3 (c) of the Act to exempt substances from any or all of the requirements of the Act to the extent a determination can be made consistent with the adequate protection of the public health and safety. Where special problems are presented with respect to substances marketed in aerosol containers, these problems can be brought to the attention of the Secretary with a request for an exemption from any or all of the requirements of the Act if such modification is consistent with the adequate protection of the public health and safety. Procedures have not yet been established for filing a request under this Section and these procedures may be dealt with by regulation.

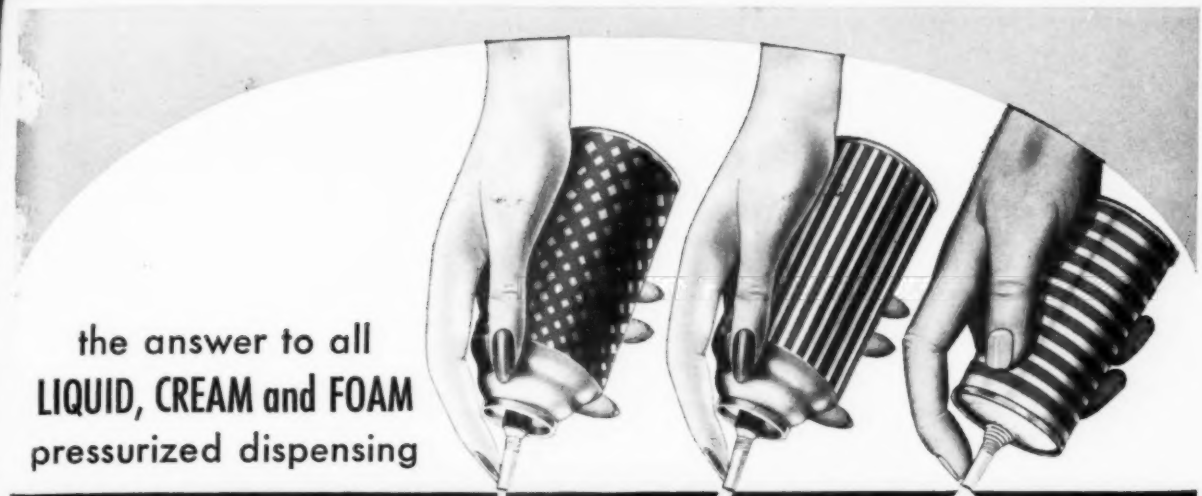
Marketers of aerosol products should anticipate that the penalty and condemnation provisions of this Act will be fully effective on January 12, 1961, and review their products with this in mind. The Precautionary Labeling Committee of the Chemical Specialties Manufacturers Association is planning to submit recommendations to the Department of Health, Education and Welfare with respect to regulations for the enforcement of this Act. The responsibility for compliance with this law, however, rests with each marketer.★

Rexall Drug Doubles Capacity of St. Louis Plant



Rexall Drug Co., one of the nation's largest drugstore chains, has installed a second complete aerosol line in their St. Louis plant. The new line is an "800 Series" completely automatic straight line built by The Kartridg Pak Co., Mount Prospect, Ill. It consists of an electromatic filler, a purging unit, a crimper, a pressure filler, a pressure tester and water bath. It is capable of pressure filling up to 120 cans or bottles per minute.

The new line is said to give Rexall considerable aerosol packaging flexibility. The company's first areosol line, also built by Kartridg Pak, is an automatic straight line for cold filling. Hence, the company is now able to package any product with any propellant. The plant is presently filling Rexall drug products sold in their stores and agencies throughout the country.



the answer to all
LIQUID, CREAM and FOAM
pressurized dispensing

Clayton

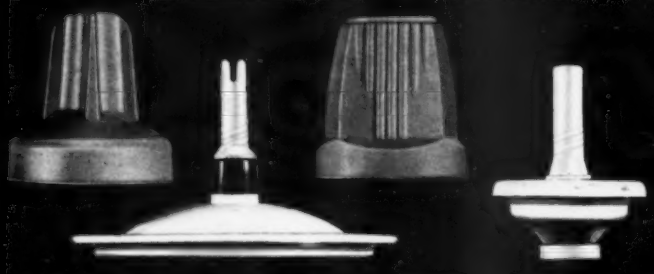
"NOZZLE DOWN"
dispensing valves and covers

TIME TESTED AND PROVED
ON HUNDREDS OF MILLIONS OF CONTAINERS

COSMETIC, PHARMACEUTICAL, PERSONAL, AUTOMOTIVE, HOUSEHOLD — OR FOOD . . . whatever your product, liquid, cream or foam . . . CLAYTON NOZZLE DOWN VALVES will dispense it more efficiently, more naturally . . . pointing the product where you want it . . . never clogging, always staying intact. Various types and designs are available with suitable flow rates and materials to meet your specific product requirements.

Superior in production, all CLAYTON VALVES assure uniform gassing . . . pressure-fill at highest speeds. No parts to assemble in your plant. Dependable in shipment . . . components can't come apart. Distinctive, patented positive-action screw covers keep your product safe.

CLAYTON NOZZLE-DOWN VALVES ARE THE MOST FAMILIAR, ACCEPTED, PREFERRED AND CONSISTENTLY BOUGHT VALVES FOR FOAM PRODUCTS . . . THE MOST EFFECTIVE FOR ALL CREAM AND LIQUID PRODUCTS!



ALL VALVES AVAILABLE WITH COLOR-ENAMELED MOUNTING CUPS. HIGHEST QUALITY, CHEMICAL AND CORROSION-RESISTANT INTERIOR COATINGS!

DIP TUBE VALVE

The best available! Dispenses with forward or downward push. Gasses and dispenses uniformly. Pressure fills at highest speeds. No metal valve parts exposed to product.

Clayton
CORPORATION

WRITE, PHONE OR WIRE US FOR COMPLETE DETAILS!

4205 FOREST PARK BOULEVARD • SAINT LOUIS 8, MISSOURI

For success in creating

Aerosol perfumes and colognes

rely on Givaudan ability

Superior skill, artistry, creative imagination, knowledge of consumer preferences...these are the foundations on which a successful perfume or cologne is built. But...an aerosol fragrance requires even more.

Givaudan offers a complete line of perfume and cologne fragrances which have been specifically prepared to meet the requirements of pressure packaging. Or, we can custom-make a fragrance to meet your specific aerosol needs.

Our staff will welcome the opportunity to discuss your aerosol fragrance requirements.

GIVAUDAN-DELAWANNA, INC.
321 West 44th Street, New York 36, N. Y.

The Filler Speaks:
(first of a series)

Gene Rose Discounts Signs of Possible Market Saturation

Bright Future seen for perfumes, pressurized foods

EUGENE ROSE is a veteran of 20 years in the cosmetic industry, of which 12 have been devoted to the packaging of aerosol products. "Gene," president of Gene Rose Co., Chicago, aerosol custom loader, in just six and one-half years of operation has built his firm into a business doing in excess of $2,500,000 a year. A member of the Young President's organization, the Society of Cosmetic Chemists and the American Chemical Society, he is the author of several industry patents and has been a contributor to a number of seminar discussions involving technical aspects of the industry.

In this exclusive interview with *Aerosol Age*, Mr. Rose discusses important industry-wide problems whose solution will have an important bearing on the future of aerosol products.

Q.—*An issue of much speculation at present is the future of the pressure packaging of food products. How do you feel about food aerosols?*

A.—I believe there is a bright future in the pressure packaging of food products. However, if this is to become a reality, the industry must keep in mind that there must be a *good reason* for packaging the product in an aerosol package. The pressurized food product must have "a reason for living" over and above the gadget appeal. It must be easier, quicker, more convenient and, if possible, more economical to use in the push-button form than in the conventional form. For instance, in my opinion, the pressurizing of catsup and mustard does not offer a very great potential. On the other hand, cake decorations, spreads and special condiments might offer a challenge to the merchandising talents of the food companies.

Q.—*What is the private label filler's role in the aerosol food field?*

A.—The private label filler has a definite but confined role in the development of a food aerosol. He can contribute his technical knowledge and experience toward the development of the final package. This is a cooperative "team" undertaking, comprising the food specialist familiar with the chemical composition and the private label filler who understands the pressurizing techniques, gas compatibilities, as well as characteristics of the physical packaging components. A great deal of time and expense can be saved by taking a custom filler in as a "partner."

I do not believe that a private label filler has a place in actually producing the finished product. With realistic appraisal of the manufacturing and bulk transportation problems, I believe that it is more practical to place a $25,000 machine next to a million-dollar manufacturing plant at the site of the prime producer than to literally move the prime bulk producer next to the machine.

Q.—*How can the custom aerosol filler increase business within the framework of his present operations?*

A.—The answer to the question lies within the framework of research and development, which extends to new products as well as to new high-speed production methods and automation.

(*Continued on Page* 145)

By A. H. Yeomans*
Entomology Research Division
Agricultural Research Service
U.S. Dept. of Agriculture
Beltsville, Md.

Aerosol Particle Size

as a factor in product efficiency

THE SIZE of particles has a considerable influence on the effectiveness of any particular aerosol, since it determines the time the aerosol remains suspended in the air. For an insecticide, the particle size is a critical factor as it directly influences the amount that collects on an insect as it flies through the aerosol. If the particles are too small, they are deflected from the flying insect as smoke is from a moving automobile, but they will settle out on the insect while it is at rest if the exposure time is adequate.

If the particles are too large, they will settle rapidly and will provide poor dispersion; therefore making poor their chance of contacting the insect. When an insect does collide with an oversized droplet, the excess insecticide is wasted.

Aerosol particles tend to settle vertically at a rate related to their size. The time required for oil particles to settle 10 feet is given below.

Diameter in microns	*Time*
1	26½ hours
5	72 minutes
10	19
15	15
20	5 minutes
30	2
50	45 seconds
100	11

Water droplets settle slightly faster. The lateral dispersion of aerosols is accomplished by air currents after the small impetus from the atomizer is expended. Aerosol particles will not be conveyed into dead-end cracks or into materials through which air does not circulate.

As would be expected, small particles disperse laterally to greater distances than do larger ones, as they are suspended in air for a longer time. In unheated buildings air currents are at a minimum, but heating sets up convection currents that are a great aid to dispersion. Table 1 shows the dispersion of aerosols of various particle sizes in an unheated room with a ceiling height of 8 feet.

About 95% of an aerosol settles on the top of horizontal surfaces, and the remaining 5% on walls and ceilings. The amount of deposit on a horizontal surface depends on the concentration of the aerosol directly above the surface. Therefore, if the aerosol is evenly dispersed throughout a room, the deposit will be proportional to the distance of the surface from the ceiling. The deposit on walls and ceiling is mainly on small protrusions, such as fibers, and on rough surfaces which catch the particles as they go by on air currents or in settling. Insects resting on the walls and ceiling will also be struck by an occasional particle as it passes by. Surfaces colder than the air temperature slightly attract very small particles.

No single particle-size range is suitable for all conditions where an

TABLE I — LATERAL DISPERSION OF AEROSOLS OF VARIOUS PARTICLE SIZES RELEASED AT CEILING LEVEL IN AN UNHEATED ROOM 8 FEET HIGH

Feet from source	*Percent of particles of indicated mass median diameter*			
	5 microns	*15 microns*	*25 microns*	*45 microns*
0	28	43	66	84
10	25	40	29	15
20	20	13	4	Trace
30	10	4	Trace	
40	7	Trace		
50	5			
75	4			
100	Trace			

*Compiled from two USDA bulletins by Mr. Yeomans: "Directions for Industrial Use of Aerosols" (ARS-33-58, a revision of E-835); and "A Method of Determining Particle Size of Liquefied Gas Aerosols" (ARS-33-5).

Is your product dressed for sales?

As you know, in today's market, your product must be smartly dressed and up-to-the-minute, for maximum sales appeal at the point-of-purchase.

Peerasol* is the distinctive, seamless, aluminum aerosol container that is being chosen by drug, cosmetic, pharmaceutical and specialty product manufacturers to meet a growing consumer demand for smaller pocket and purse size aerosols. It is the only aluminum aerosol container with a patented neck for a leak proof valve-cup fit. This feature, combined with the extruded one-piece construction, makes a container you can market with confidence. Peerasol containers can be handsomely lithographed in two, three, or four colors over a base coat, and come in capacities ranging from one-half to four ounces.

Peerasol is another development of the Peerless Tube Company, a pioneer in the manufacture of collapsible metal tubes as a package for commercial use.

For complete information about Peerasol containers, write or call—

PEERLESS TUBE COMPANY, Bloomfield, N. J.

** Peerasol is a tradename of the Peerless Tube Company.*

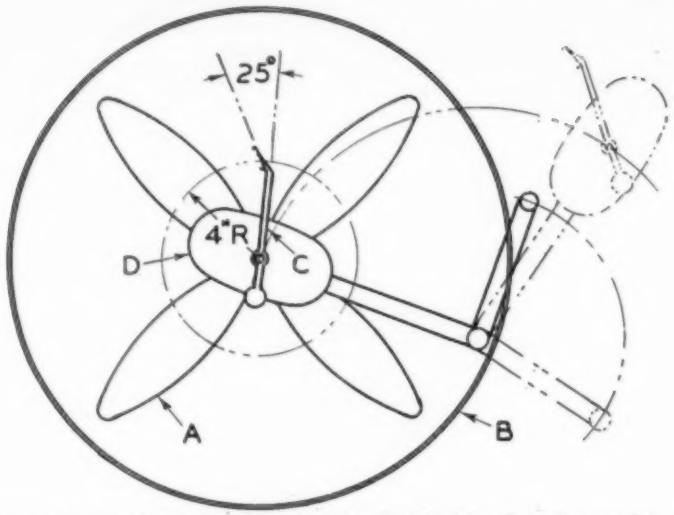


Figure 1.—Impactor for sampling aerosols, looking from the release point through the tube toward the fan: A, ventilating fan; B, tube; C, slide holder; D, stirrer motor.

aerosol may be used. The particle-size range should be selected after the factors involved in a proposed treatment are evaluated. The most important factor is time. If the aerosol is to be applied to a structure or room that can be closed for several hours, small particles will give the best dispersion and penetration into small crevices.

When treatment must be limited to a short time, larger particles are necessary. A 15-minute exposure is sufficient with an aerosol having particles with a mass median diameter of 15 microns, since most of the particles will settle 10 feet within 5 to 15 minutes. Where flying insects are to be controlled, this type of treatment is quite satisfactory. However, since lateral dispersion is restricted when particles of this size are used, in large rooms or structures the aerosol must be released from several points to give uniform dispersion.

Many types of application require particles between 5 and 15 microns in diameter. The proper relation between time of exposure and particle size can be calculated from the tabulation given on pg. 85. The allowable settling time should be based on the smallest particles. The approximate distances for uniform dispersion can be determined from Table 1. Better dispersion can be obtained when heating sets up convection currents or when fans are used.

A SATISFACTORY method of determining the particle size of liquefied gas aerosols is to deposit a sample on a glass slide and measure the particles under a high-power microscope. The temperature of the formulation and dispenser is set at 80°F.

The slide (1 by 3 inches) is coated with an oleophobic substance that will cause the droplets to retain some of their convexity and prevent irregular spreading on the slide. A satisfactory material is a 10% solution of Dri-film SC-87 (General Electric Co.)[1] in toluene. The slide is immersed in a cleaning solution, dried, immersed in the oleophobic-coating solution, and then after a few seconds lightly polished with a soft cloth. (Fumes from the Dri-film should not be inhaled). A slide coated with this material can be used for many samples, if it is washed with acetone after each use. When the droplets no longer remain circular, the slide should be recoated.

The method of depositing the droplets on the slide depends on their size. For aerosols in which all the particles are less than 50 microns in diameter but the mass median diameter is more than about 8 microns, either the slide can be waved horizontally through the aerosol cloud toward the release point or an impactor can be used (fig. 1). This impactor consists of a 2,000 cubic-feet-per-minute ventilating fan (*A*) which draws the aerosol through a tube (*B*) 20 inches in diameter and 60 inches long. The aerosol is released at the center of one end of this tube so that it is carried toward the fan at the other end. At 42 inches from the release point and in front of the fan, the slide is revolved on a 4-inch radius at 400 r.p.m. This is done by means of a counterbalanced slide holder (*C*) turned by a variable-speed stirrer motor (*D*) (Central Scientific Co. No. 18805).[1] The optimum air flow and the speed of revolving the slide in this impactor were determined from many tests but are not critical.

The slide holder (*C*) is made with three edges bent 1/16 inch over the face of the slide so that it can be pushed in easily and the 1-inch open end of the holder can face the release point of the aerosol. The slide revolves counterclockwise with its exposed face in the direction of rotation. The outside 3-inch edge is located ahead of the bottom edge, making a 25° angle between the face of the slide and the 4-inch turning radius, in order to minimize sliding of the droplets due to centrifugal force.

The time the slide is exposed to the aerosol is important. If *too many* particles are allowed to deposit on the slide, some will fall on top of others and give a false reading. It is best to expose the slide long enough for about 0.3-0.5 gram of the formulation to be released. This can be accomplished on the impactor by lowering the revolving slide quickly into the stream of aerosol. If the slide is passed by hand through the aerosol it must be done at a distance of approximately 42 inches from the release point.

After the aerosol is deposited on a slide, it is placed under a microscope, and the particles are measured

[1] Mention of these manufacturers does not constitute endorsement of their products by the Department of Agriculture.

A rose and a nose... Otto of Rose, precious natural product of Europe's famed "Valley of the Roses", must pass this final olfactory test after exacting chemical and instrumental analyses have eliminated all but the finest.

Wonderful World of Fragrance

In Europe, South America or the Far East . . , wherever IFF customers produce and sell their products, they can depend on the same precise quality and uniform product specifications that typify IFF perfumes the world over.

Custom made fragrances created and produced by IFF are giving distinctive sales appeal to an ever increasing number of successful products in every market.

iff

van Ameringen-Haebler *division*

INTERNATIONAL FLAVORS & FRAGRANCES INC.

521 West 57th St. • New York 19, N.Y.

Leading Creators and Manufacturers in the World of Fragrance

ARGENTINA AUSTRIA BELGIUM BRAZIL CANADA ENGLAND FRANCE GERMANY HOLLAND INDONESIA ITALY NORWAY SOUTH AFRICA SWEDEN SWITZERLAND

A winning team

needs a "strong bench". When you buy Duraglas containers or their closures from Owens-Illinois, you acquire the rights to a "strong bench" of technical and merchandising skill.

On call are specialists in designing packages and making them perform efficiently in your plant and where your products are sold.

Ask your Owens-Illinois salesman. Call him at your nearby O-I office or write Owens-Illinois, Toledo 1, Ohio.

DURAGLAS CONTAINERS
AN (I) PRODUCT

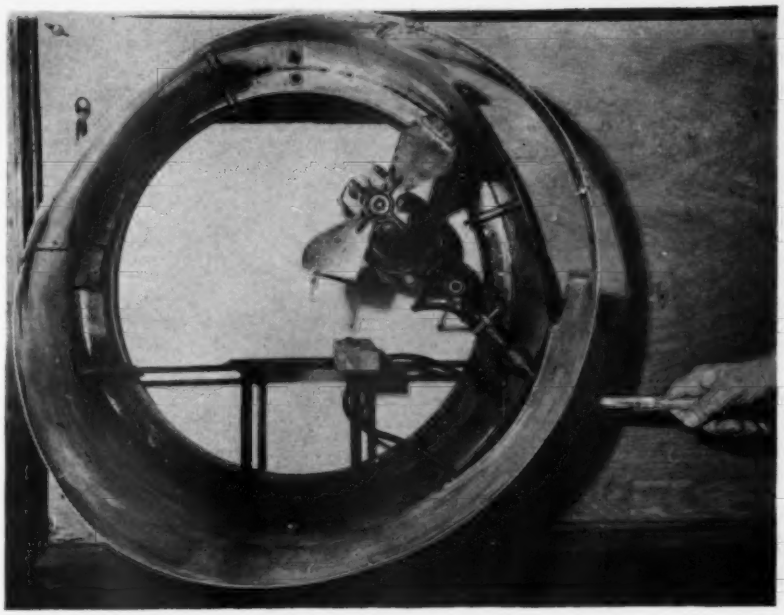
OWENS-ILLINOIS
GENERAL OFFICES • TOLEDO 1, OHIO
PACIFIC COAST HEADQUARTERS • SAN FRANCISCO

with an eyepiece micrometer having 50 divisions, each division equal to 15.4 microns. A 100-power microscope is best for particles of aerosol size. A mechanical stage on the microscope is necessary. The diameter as measured on the slide is then corrected for the spread that takes place so that the diameter of the original sphere can be determined.

At least 200 particles should be measured. All the particles from one edge of the slide to the other are counted as the slide is moved by the mechanical stage. Representative data illustrating this method are given in Table II.

The diameter (D) is used in the first power only. The mass median diameter is computed on the basis of volume, which is in ratio to D^3, but the particles impinge in ratio to D^2. Therefore, the number of particles is multiplied by D^3/D^2, or by D. The accumulative percentages are plotted on an logarithmic probability scale (No. 3128, Codex Book Co.).[1] The 50-percent point of the line so plotted is taken as the median of the particles as they appear on the slide. A correction factor must be determined for each slide. The spherical droplet as it impinges on the slide becomes a convex lens, and its spread from its original shape can be calculated by determining the focal length of this lens by the method described by May.[2]

[2] May, K. R. 1945. The cascade impactor. An instrument for sampling coarse aerosols. *Jour. Sci. Instr.* 22: 187-195.



A photograph of the device.

Measuring Spread Factor

Use a compound high-power microscope but remove the condenser and use the flat mirror with outside light. Focus on a particle the diameter of which before correction is approximately 30 microns, and record this reading of fine-focus adjustment. Manipulate the fine-focus adjustment and mirror until some distant object (window frame) is in as sharp a focus as possible, using the drop as a lens, and record this reading of fine-focus adjustment. The difference between the two readings of the fine-focus adjustment is the focal-length change.

$$\frac{\text{Focal-length change}}{\text{Diameter of particle}} = \text{Spread factor}$$

Select the correction factor that corresponds to the spread factor as follows:

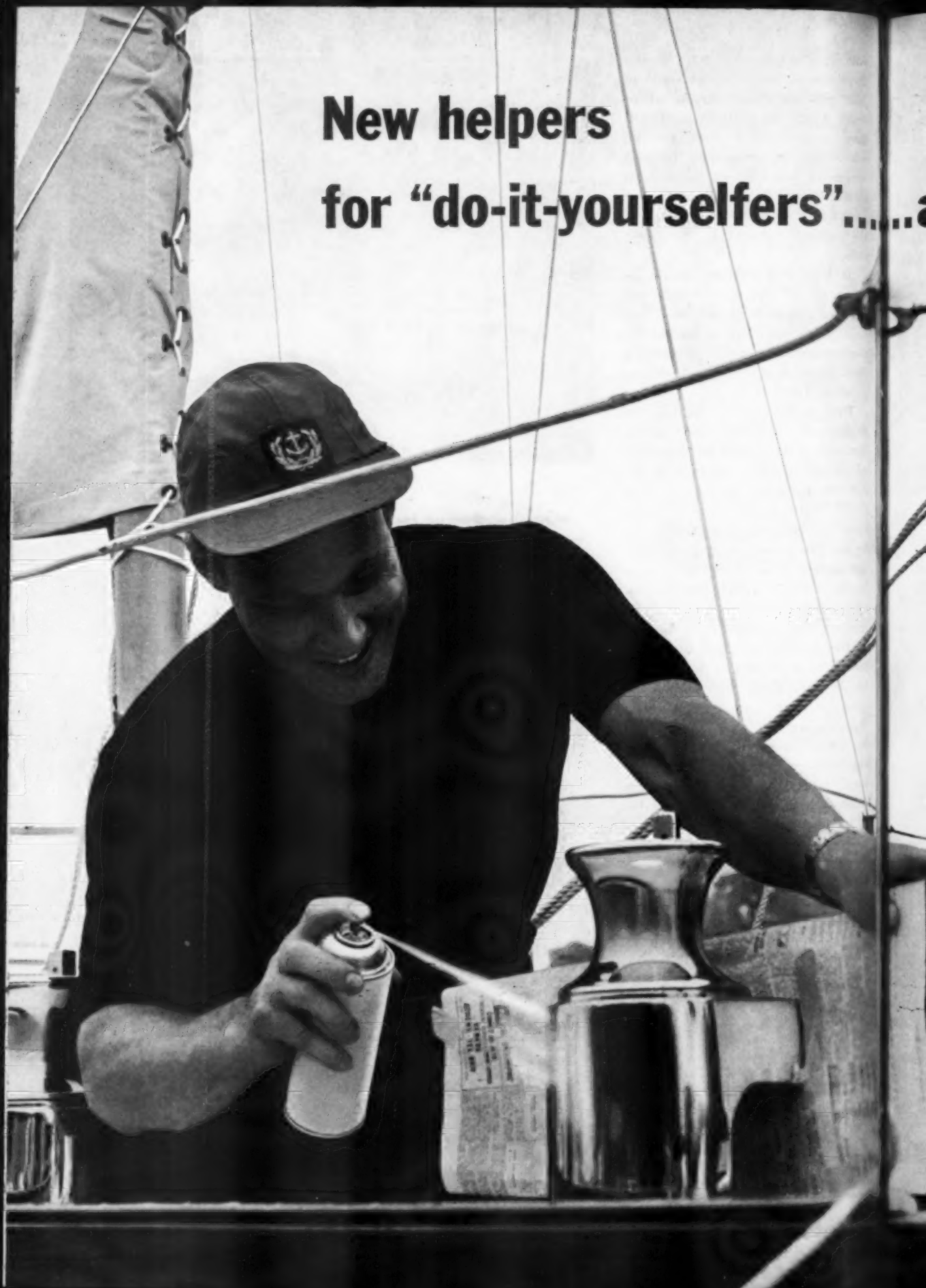
Spread	*Correction*
1.48	0.60
1.50	.58
1.55	.55
1.60	.54
1.65	.53
1.70	.52
1.75	.51
1.80	.50
1.95	.49
2.0	0.48
2.1	.47
2.2	.46
2.3	.45
2.6	.44
2.7	.43
2.8	.42
3.1	.41
3.3	.40
4.0	0.38
4.8	.35
5.0	.34
5.5	.33
6.0	.32
6.8	.31
7.0	.30
8.0	.29
10.0	.27

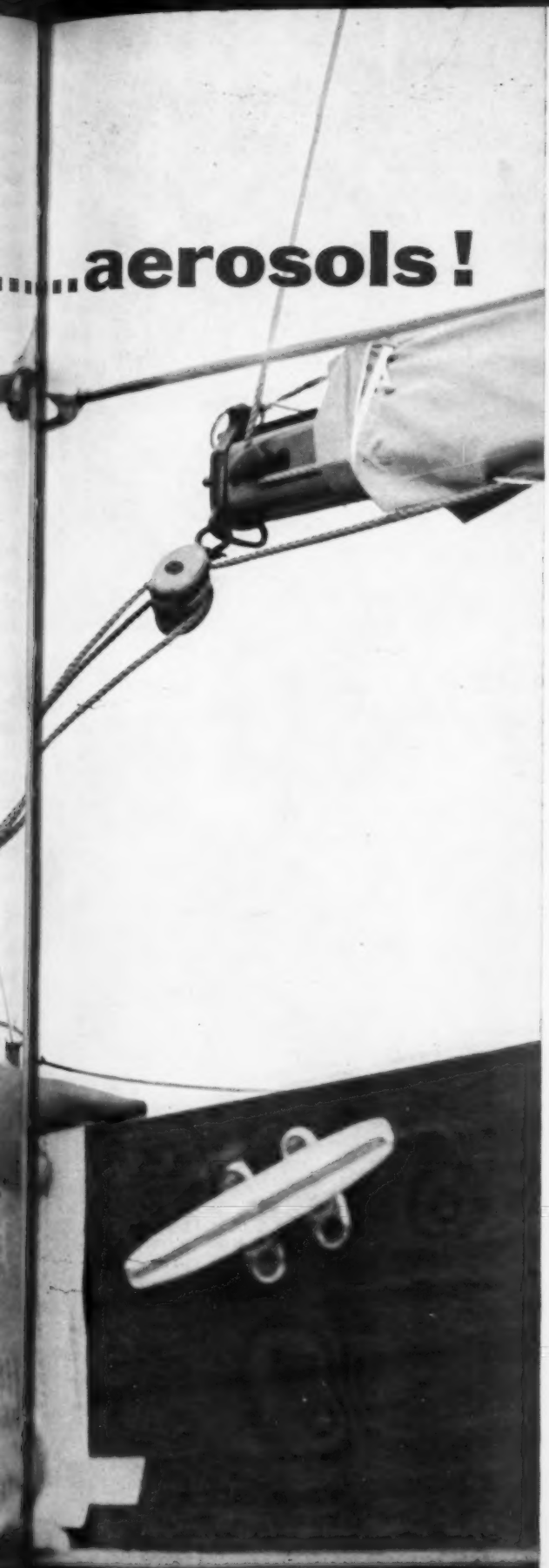
Example: A particle covering two scale divisions on the micrometer has a diameter of 30.8 microns. With a focal-length change of 103 microns, the spread factor would be 103/30.8, or 3.3. The corresponding

(*Continued on Page* 135)

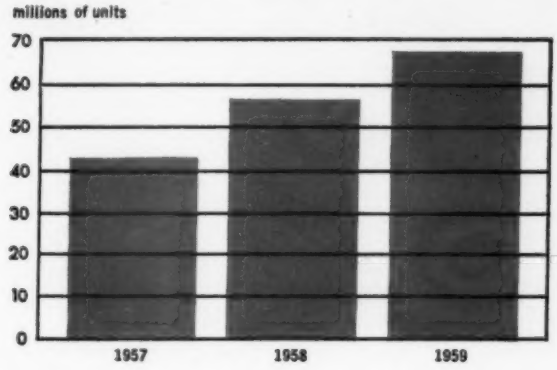
TABLE II — SIZE DISTRIBUTION OF AEROSOL PARTICLES IMPINGED ON MICROSCOPE SLIDE

Diameter (D) (scale divisions)	*Number (N) of particles*	*DN*	*Percent of total DN*	
			In each size	*Accumulative*
0.5	2	1	0.2	0.2
1.0	26	26	6.3	6.5
1.5	33	49.5	11.9	18.4
2.0	82	164	39.5	57.9
2.5	34	85	20.5	78.4
3.0	17	51	12.3	90.7
3.5	4	14	3.4	94.1
4.0	5	20	4.8	98.9
4.5	1	4.5	1.1	99.9
Total	204	415 0		


New helpers
for "do-it-yourselfers".....a



Aerosol paint and protective coating sales, for example, have climbed 58.7%* in just 3 years!



How the magic touch of aerosol packaging skyrockets sales!

Today, such handy "do-it-yourself" aerosol products as paints, protective coatings, stains, fillers, car polishes, waterproofing sprays and many others are making jobs easier, quicker and neater. Tomorrow, who knows what *new* aerosol products will capture the fancy of consumers in this important market?

If you have a product—*any* product—with "aerosol potential" why not call on General Chemical? As one of America's leading producers of aerosol propellants, General Chemical offers many helpful services to prospective aerosol marketers. For example, we can supply you with valuable technical data and the latest market information. We can show you promising aerosol formulations developed in our laboratories. And we can put you in touch with experienced contract fillers, capable of putting up small test runs for you or handling full-scale commercial production.

For further information—or if you would like to arrange for a special presentation—write or phone us today.

*Estimated by Market Surveys Department, General Chemical Division, Allied Chemical Corporation

genetron®
aerosol propellants

Putting the "push" in America's finest aerosols

Allied Chemical

GENERAL CHEMICAL DIVISION
40 Rector Street, New York 6, N. Y.

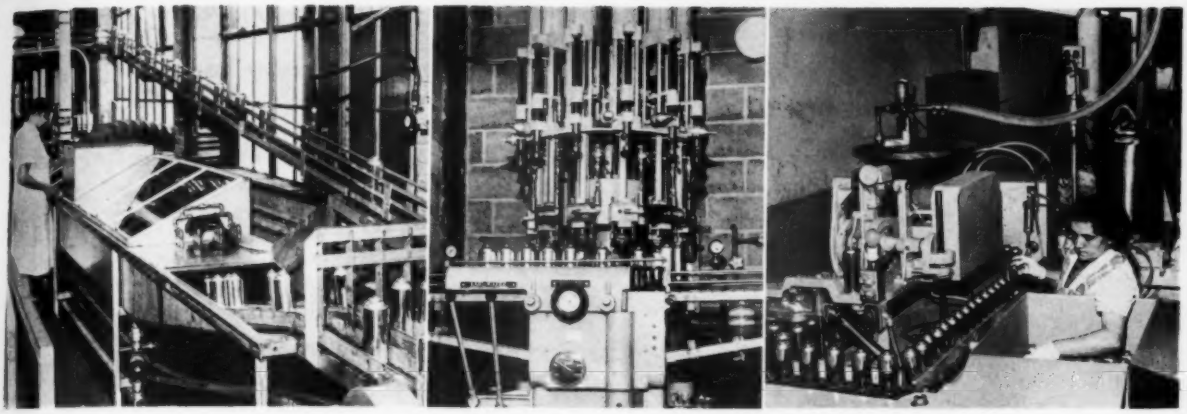
The extras in your Felton fragrance

...are Felton people! They give you their years of accumulated experience and knowledge... talent... flair... strong personal effort... *a complete extra department for you.* The costs are Felton's; the benefits are yours. Take advantage of them.

Felton Chemical Co., Inc.

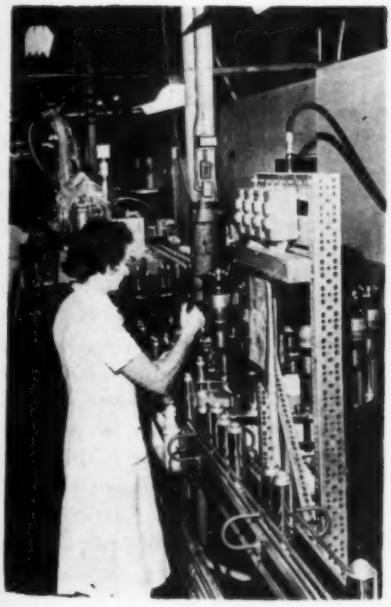
599 Johnson Avenue • Brooklyn 37, New York

Sales offices and plants in major cities, Canada and overseas



Left: Inspector checks for leaks in hot water bath. Center: 12-head Kiefer rotary gasser. Right: Filling operation showing new piston filler.

New Aerosol Techniques' Line Increases Production By 50%

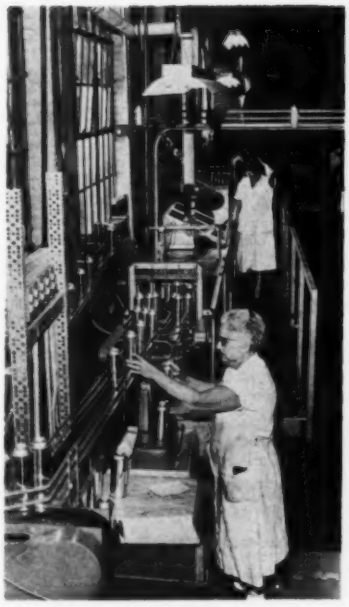


At automatic evacuator-crimper, one of ATI's staff checks crimp dimension.

A NEW rotary line, installed last month at the Bridgeport plant of Aerosol Techniques, Inc., custom filler, has stepped up the company's production capacity to more than 85 million units per year. Feature of the new line, which increases total aerosol production of the company by more than 50%, is a 12-head vacuum crimper and a 12-head high-speed rotary pressure filler. The new line is said to operate at speeds of up to 150 per minute.

According to H. R. Shepherd, president of the company, liquefied petroleum gassing is to comprise a major role for the new line as the company steps up its research and application program in conjunction with its California affiliate, Western Filling Corp., Los Angeles. Included in the expansion is a retooling of the company's cold filling lines to enable them to handle two-phase and aqueous-based systems.

The new line is located in a separate explosion-proof building where the cans are sent by conveyor from the main plant. Mr. Shepherd says that the line is the "last word in automation," with such features as a vacuum purger and automatic valver and buttoner.★



Weight checking operation. The cans are checked after gassing, but prior to water bath.

Hair Spray Patent Has First Court Test

La Maur, Barr Are Contenders . . .

A PATENT battle of the caliber of the costly, long-involved Colgate-Carter shaving cream fight was being waged in the Eighth Circuit Court in Minneapolis last month. As this issue goes to press, the aerosol industry watched the closed *(in camera)* session closely for some word on the outcome of the La Maur-Donaldson case to determine the validity of La Maur's patent rights to polyvinyl pyrollidone and a copolymer in hair sprays. Whoever wins the case, the decision is expected to clarify the whole hair spray patent question, which has been uneasy ever since La Maur, Inc., Minneapolis hair spray marketer, was issued a patent covering PVP sprays in January, 1959.

The current suit, considered by the industry as more or less a key test case to determine whether the patent can be interpreted to include the copolymer of PVP, has as its defendant L. S. Donaldson, Minneapolis department store which La Maur contends was selling Max Factor's "Sof-Set Curl Control." Working to help defend Donaldson (and to win a decision favorable to themselves and to the other non-royalty paying fillers and marketers) are G. Barr & Co., Chicago custom filler, and General Aniline & Film Corp., exclusive manufacturer of both PVP and its copolymers. G. Barr, probably the largest custom filler of aerosol hair sprays (and the filler of the Max Factor product) has announced that it is "holding harmless" its hair spray customers by assuming responsibility for damages in the event La Maur wins the case. General Aniline has a very vital interest in the case, because if La Maur should win a favorable decision, it could conceivably mean that other fillers and marketers might seek some other basic resin for use in their hair spray formulations.

The key to the entire case is whether La Maur's patent can be judged to include PVP copolymers as well as straight PVP (which the patent specifies). The general circumstances would appear to parallel the Colgate-Carter suit (1954-56), since in that case Carter's original patent covered fluorinated hydrocarbons in shave foam formulations. Colgate changed its formulation to make use of hydrocarbon (liquefied petroleum) propellants, Carter sued—maintaining that its patent *also* covered the new formulations—and lost.

Since the current hair spray market is $125 million, and because of the resources of the contending companies, it is considered possible that an opinion either way will result in an appeal. The Colgate-Carter suit went as far as the U. S. Supreme Court twice.

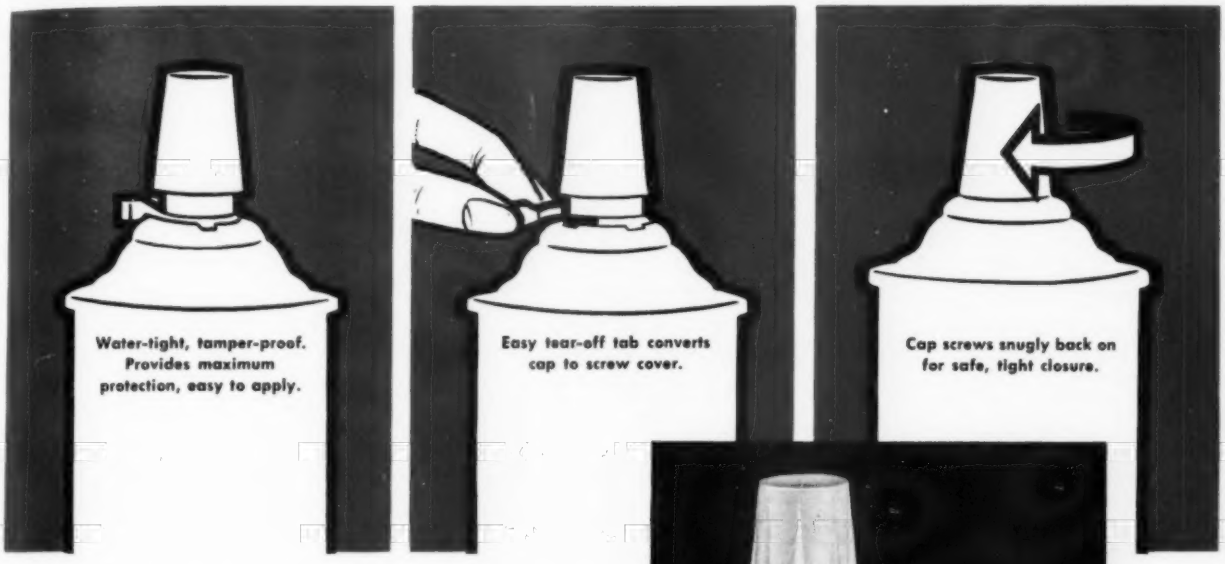
EARLY last year La Maur offered to license hair spray marketers under its patent, asking one-half cent for 8 to 16 ounce cans, three-eighths cent for 4 to 8 ounce, and one-quarter cent for cans under four ounces. Most of the major fillers have not been paying the royalty, and G. Barr and Aerosol Techniques have both said they will assume responsibility for any suits brought against them under the terms of the patent. If La Maur wins the case, it could press for payment of royalties retroactive to the time of issuance of the patent. In part of the Colgate-Carter affair, in a preliminary case to determine the validity of the original Carter patent, Colgate and several other marketers were instructed to pay Carter royalties in the amount of several million dollars.

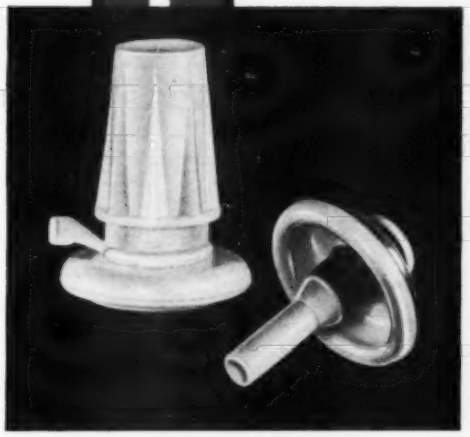
There are three possible conclusions of the case: (1) La Maur could win and could press for royalty payments from Donaldson, Barr and all the marketers of PVP-based hair sprays. Since the accounting job would be considerable, it is generally believed that the retroactive payment might not be followed and that instead marketers would be "signed up" to pay the royalty on future sales. (2) Donaldson-Barr could win, thus exempting themselves from financial liability under the patent, possibly paving the way for La Maur to sue other marketers or fillers in other courts. (3) The case could be thrown out of court on the argument that the patent is invalid. This would please the aerosol industry most, and would also please G. Barr and Donaldson since it would mean, in effect, that La Maur could not sue other companies using this same type of formulation.

Since most of the major hair sprays on the market (including those marketed by Revlon, Helene Curtis, Colgate, Breck, Toni, Fuller Brush and Avon) contain either PVP or a copolymer of PVP, it's a safe bet that some pretty important aerosol executives were anxiously watching the closed doors of the Minneapolis courtroom last month. ★

for more profitable aerosols specify . . .

AERATED'S NEW TAMPER-PROOF TEAR-N-SCRU COVER* AND NON-METALLIC, LOW-COST, AERCON TILT VALVE*


Water-tight, tamper-proof. Provides maximum protection, easy to apply.
Easy tear-off tab converts cap to screw cover.
Cap screws snugly back on for safe, tight closure.



At last! Here is a completely tamper-proof, screw-type cover. Combined with Aerated's unique Aercon Tilt Valve,* it's the newest, most desirable unit for food and non-food products. Aerated's valve and cover combination are ideal for all foam and liquid products, regardless of viscosity or density. The low-price, yet high-quality, typical of the complete line of Aerated's valves and processing equipment, make this perfect pair your most profitable to specify and buy. Contact Aerated direct for information on wide range of valve availabilities and processing equipment.

Here's Proof Of Why This New Unit Is Your Best Buy

NEW TEAR-N-SCRU COVERS*

- Unique cover is completely tamper-proof. It has to be torn open.
- One simple step converts cap into easy, tight-sealing screw-on cover.
- Completely waterproof cover is ideal for high-speed, efficient filling operations.
- Covers come in a variety of colors, and are made of inert material that is not affected by temperature.
- Cover eliminates contact between nozzle and cap, assuring a sanitary product.
- Cover upgrades your product and has high consumer merchandising appeal.

PLAIN OR DECORATOR TIP AERCON TILT VALVES*

- Patented spring diaphragm incorporating a limit lock guarantees uniform preloading and quick acting shut-off.
- Specially designed valve seat assures leakproof seal and provides an easily controlled flow for accurate, upsidedown dispensing, directly where required.
- Pressure fills fast and economically with all food and non-food products. Decorator's tip delivers a pattern foam, with maximum over-ride, prevents glossing, and eliminates upsurging.
- Low price and wide range of valve availabilities are the result of carefully controlled research and testing.

*Aerated valves and covers protected by one or more of the following Patents: U.S. Pat. No. 2,612,293, 2,877,936—BRITISH Pat. 771,141—CANADIAN Pat. 506,911. Other U.S. and foreign Patents pending.

ingenious aerosol research and manufacturing since 1946

AERATED CONTAINER CORPORATION

39 South La Salle Street • Chicago 3, Illinois

Six new products have been recently added to the burgening Italian aerosol industry. All six are packaged in one-piece aluminum containers with valves manufactured by Solfrene S.p.A., Milan, Risdon licensee for Italy and Germany, and all are filled by Solfrene. **Leocrema** and **Skol-Fluff** are sun tan creams, while **Sunny** is a sun tan oil emitted as a spray. **Squibb's Ultra-Rapid** hair lotion is in cream form and **Razzia** and **Timor** are both residual insecticides.

A new product of Torsleffco AB, Stockholm, Sweden, is **Barrisol** air freshener. Valves are from Aerosol Research and six-ounce can from Crown Cork & Seal, both imported from the U. S., and loading is done by Aerosol Packaging Co., AB, Stockholm.

Pedo-Spray and **Deo-Spray** are two new products of Dr. Scholl for the Italian market. The first is sprayed inside shoes to promote the wearer's comfort, the second used as a refreshener and antiseptic deodorant. Both use valves made by Solfrene, Risdon licensee in Milan.

Fluoro Glide is a multi-purpose dry film lubricant introduced by Chemplast, Inc., East Newark, N. J. Described as a colloidal form of Teflon, it uses "Freon" as the propellant.

Eau de Crepe de Chine Spray is a new perfume product of Parfums Millot, Inc., New York, and employs an etched glass container with a fluted gold cap. Three-ounce unit retails for $5.

Spray-O-Namel metallic enamel is a new line just introduced by Illinois Bronze Powder Co., Chicago. Line comes in gold, copper, brass, platinum, silver, antique gold, pewtertone, government bronze, statuary bronze, and English antique bronze.

CRC Soft Seal is a product used to prevent corrosion of metals in production processes, storage, and equipment. 16-ounce container, which delivers a coating from 1 to 8 microns thick, is equipped with Newman-Green valve. Corrosion Reaction Consultants, Philadelphia, is the marketer.

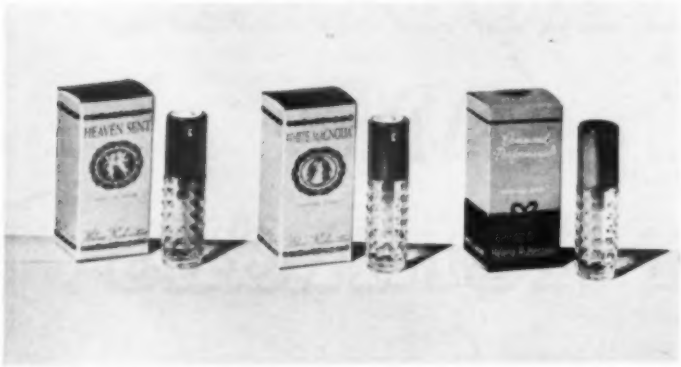
NEW PRODUCTS AND PACKAGES

Saravel, New York perfume house, has introduced its **Morocco** and **White Christmas** scents in 1½-ounce spray mist containers equipped with a B-8 valve and mechanical break button by V.C.A. Bottle is by Foster-Forbes, cap by Pharma Plastics, and silk screening by Seri-Print. Filler is Aero-Chem.

Vaga-Spray, a product of Melo Park Laboratories, Edison, N. J., is said to be the first vaginal cleaner developed in the U. S. It is equipped with a non-metallic Risdon foam valve.

Rulon Spray is a reinforced fluorocarbon slip and anti-stick agent just introduced by Dixon Corp., Bristol, R. I. It uses a Crown can with a Precision valve and product is said to be stable to over 500°F.

A new quick drying feature is main selling point of the **New Quick-Dry Vinylized Enamels** marketed by Seymour of Sycamore, Inc., Sycamore, Ill. Unit, in a variety of colors, retails at $1.09 per 11-oz. container and $1.39 per 16-oz. unit. "Freon" is the propellant.



Helena Rubinstein, New York, has introduced its fragrance line in an uncoated Foster-Forbes bottle equipped with a VCA B18F metering valve. One quarter ounce container is filled by Aero-Chem.

Profit Package

for manufacturers

MORE SALES

FITS ALL CANS

SNAPS ON IN SECONDS

REDUCES CUSTOMER COMPLAINTS

LOW COST

ACCURATE, EVEN SPRAY

No hand contamination from insecticides

Makes every amateur a professional spray painter

...FOR MORE EFFICIENT INDUSTRIAL APPLICATIONS
...FOR BIGGER RETAIL SALES

Now...aerosol product manufacturers of *industrial and commercial paints, insecticides, hair sprays, deodorants, household sprays,* etc., can be sure of *more sales* easier with the ALFCO Spray-Can Handle. Alert manufacturers everywhere are packaging and selling this sensational handle with every can. Customer complaints are reduced. Dissatisfied, one-time buyers are eliminated. Handles may be "private-labeled" in recessed portion of handle for close promotional tie-in with *your own* aerosol product. Handles are easily detachable for interchangeable use on other spray cans. For really big AEROSOL sales, investigate the "Profit Package" possibilities with the ALFCO Spray-Can Handle as a companion to your aerosol product.

Protect your reputation with quality—at low cost

WRITE, WIRE OR PHONE TODAY FOR COMPLETE DETAILS

ALFCO, INC. 4950 S. SEPULVEDA BLVD. CULVER CITY, CALIFORNIA **UPton 0-6716**

Consultant's Corner

by Robert A. Foresman, Jr.
Aerosol Consultant
Philadelphia, Pa.

Photographs for the Aerosol Laboratory

USUALLY any discussion of aerosol laboratory facilities concerns itself with the specialized equipment unique to the aerosol field. However, the *recording* of data is at least as important as gathering it in the first place. For this purpose one of the most useful adjuncts to my laboratory has been a camera and the processing facilities that go with it.

There are almost unlimited applications of photography to aerosol technology, but one of the most important is in the preservation of evidence of mechanical damage or defect due to machine adjustment at some stage in the assembly of the aerosol package. This is especially important if there is a consideration of liability for some reason. The liability might be that of a supplier to a filler, or a filler to a distributor or of a filler to a consumer, or even of a distributor to a consumer. Photographs of all parts of a package in question showing damage or defect, label (all around), coding, evidence of burning, piercing, external impact, tampering or external corrosion are all valuable and should be taken as a matter of course if the container must be altered or destroyed in the course of an investigation. Frequently a step-by-step series of pictures (as a situation is unfolded) is helpful. This would include the original conditions in which container is received, label removed, damage to wall evidenced by sharp pointed dent in wall, cut away of shoulder and valve cup to show dislocation of valve stud, etc. In all such cases it is well to keep all parts of even an almost completely dissected container attached to each other so that there can be no doubt that the picture or even the real sample applies to the container in question. In addition, if the picture can be taken to include a code number or a portion of the package label damaged in some recognizable way, so much the better. It is also a good idea to always include in the original photo an identification card giving a reference, dates, project title, etc. These procedures will serve to positively identify the subject as the proper one and will further insure that a particular picture will not be mixed up with another similar one.

ANOTHER use of the camera in aerosol laboratory work is in recording spray patterns and flame projection in flammability testing. In both of these cases a dull black matte finish background is desirable. Illumination for both purposes can be by flood or flash light from either below or above to illuminate the entire container and cross illuminate the spray cone (in the case of the spray pattern), thereby increasing the diffusion of light by it and consequently its contrast with the background. Naturally the effect of artificial illumination on the flame in a flammability test will be negligible. One point here, though, use either an orange or red filter (do not use Verichrome film) as contrast for the flame can sometimes be a problem. Another detail that should be observed in photographing flame projection or even, in some cases, spray patterns, is to use two measuring scales at least one foot apart and placed so that both scales are parallel and even with each other. When a photo is to be made of the spray cone or flame, the camera should be so placed that a line through the measurement at the end of the cone on both scales will go through the center of the lens. This procedure will eliminate possible parallax due to the horizontal spread of the cone, and if both scales are in the picture the accuracy of the determination will be supported.

Sources of leaks can be shown by taking the picture *through* the wall of an aquarium type water bath. Some practice may be necessary here since illumination and proper definition of the source may be a problem. Occasionally multiple exposures of the bubbles may be useful so that a pattern will show if they are very slow in forming. Where this procedure is used, the identity card in the picture ought to state the fact. Lighting for multiple exposures should be concentrated on the bubble path—the fixed portions of the picture should be under illuminated, as their aggregate exposure time will be relatively great.

Pictures of gross effects of accelerated storage can be useful, but here a word of caution is in order. DO NOT rely on overall pictures of corrosion for any purpose other than casual interest. Except for a comparison of general areas of involve-

PRESSURE GAUGE

A newsletter published periodically by

AEROSOL TECHNIQUES, INC.

BRIDGEPORT 5, CONNECTICUT

AEROSOL AGE EDITION — OCTOBER, 1960

ATI'S FIFTH ANNIVERSARY: MAJOR NEW LINE INSTALLED

Five years young this month, Aerosol Techniques, Inc., completes its latest expansion program with the addition of an entirely new line increasing the production potential of the main plant to more than 85,000,000 units. Operating at a speed of up to 150 units a minute, the new line ups ATI's manufacturing capacity more than 50%. The line is the last word in automatic development, including a 12 head vacuum crimper, 12-head high-speed rotary pressure filler, automatic valver and buttoner, and vacuum attachment to purge air from the cans prior to filling. With the new facility ATI steps up its liquefied petroleum gassing program as one of the few fillers equipped for large-volume LP loading.

Aerosol Techniques' latest acquisition culminates a five-year growth story which has produced one of the most extensive pressurized packaging operations in the industry. With the recent consolidation of warehousing, receiving and shipping near the main Bridgeport plant, the augmented facilities of ATI and its associated California company, Western Filling Corporation, now total more than 200,000 square feet.

FROM ATI TO YOU:

Not many years ago 85,000,000 units was more than the aerosol industry's total output. Today, with our new line, that is ATI's productive capacity. On this very happy fifth anniversary we address our thanks to the co-workers, customers and suppliers who have made our success a reality as we reaffirm ATI's by-words: "Imagination . . . creation . . . realization."

H. R. SHEPHERD, President

HOUSEWIVES ON MARCH TO PUSH-BUTTON STARCH

Biggest new product news of the year in aerosols is push-button starch, easiest and simplest method yet devised for starching clothing. It's the all-American answer to the housewife's longtime headache of tedious, messy starch preparation and application. Natural and synthetic types, each effectively adaptable to aerosol dispersal, are now being produced and packaged by Aerosol Techniques, Inc., for leading marketers who see spray starch well on its way to winning a sizable part of the home laundry starch market, estimated at more than $65,000,000 annually.

IN THE A-T-EYE

A feature story by Gay Pauley, women's editor of United Press International, starred Ethel Walsh, vice-president of Aerosol Techniques, Inc., and substantially added to the aerosol consciousness of millions of newspaper readers from coast to coast. Not only that, but the widely-published article cued an NBC "Emphasis" broadcast by the noted newscaster Merrill Mueller, who recalled knowing ATI's woman executive when he worked at Bridgeport Brass years ago. Both the UPI and NBC features spotlighted aerosol colognes, now topping $120,000,000 annually, and S. L. Mayham, executive-vice-president of the Toilet Goods Association, agreed that "aerosol packaging has boosted sales substantially" . . . Typical headlines on UPI's story: "World Smells Like a Rose with Push-Button Perfume," "Aerosol Packages Up Cologne Sales," "Lady with a Push-Button Career," "Cologne Now Scents All of House, from Laundry to Closets."

Ethel Walsh

AEROSOL TECHNIQUES, INC., is exclusively devoted to private label manufacturing, research and development of aerosol cosmetics, pharmaceuticals, industrial and chemical specialties. ATI's newsletter, "Pressure Gauge," including technical and market data, will be mailed regularly upon request.

ment for the same type of corrosion, nothing short of detailed photomicrographs is worth the cost of the film for evaluative study. The same is true for changes in internal coating systems. Close-ups of changes in a soldered seam can be helpful, as can pictures of changes in dip tube conditions.

Pictures of gauge or meter dials and thermometer readings which include an identifiable sample and process are often excellent file records to make up a total record of a particular research effort. Even the results on a direct read-out balance can be constructively photographed on occasion.

Photomicrographic techniques can be valuable for detailed corrosion study, for study of changes in the elastomer seals and plastic parts of valves, with storage under use conditions. Using this technique it is also possible to record the results of a particle size determination, although labeling in the picture at the time of exposure is for all practical purposes impossible and from a legal or supporting standpoint such pictures would add little to the usual report. Comparative studies of particle size determinations recorded in photos can, of course, be helpful to the researcher for his own purposes.

IN THE plant, batch mixing operations can be quality controlled by photographing liquid or dry measurement indicators as each step is taken. The setting of dials and other controls for a particular operation is often best communicated to shift supervisory personnel by including pictures of each setting. This may seem involved or cumbersome, but I know of at least one case where considerable loss was caused by a recurrent error that could have been effectively eliminated if the people who made the error had had a picture of what their setting should look like.

Illustration by photograph of pertinent maintenance and mechanical adjustment details on each machine or piece of equipment in a plant can be more useful than all the printed or written instructions ever produced.

Unsafe practices can be pinpointed and in some cases discovered by photographing danger spots. On one occasion to my knowledge a rather serious horseplay condition at an exit door was actually photographed in action. The ones involved were recognizable in the picture posted on the company bulletin board, much to the perpetrators' embarrassment. Obscure but present dangers can be pointed out more effectively by pictures than through any other medium.

Some word concerning equipment may be of interest, certainly it can be little more as there could be as many choices as there are people to use them. My own camera is a 2¼ x 3¼ Speed Graphic with a f4.5 lens; it allows ground glass focusing, it has a double extension bellows, a rising front, and both between-the-lens and focal plane

(*Continued on Page* 134)

TOPS in QUALITY and SERVICE
Immediate Shipments Available From Floor Stocks In All Sizes And Styles In Standard Decorations.

THIRTY-SIX SPECIAL COLORS
Available From Our "IN-HOUSE" Color Assortment.

Sample Kits And Quotations Available Upon Request.

Watch For Our New "COVER—ALL" Single Shell "OVER—CAP"

The Complete Aerosol Cover Cap Line by

West Penn Mfg. & Supply Corp.

809 Second Avenue · Brackenridge, Pa.

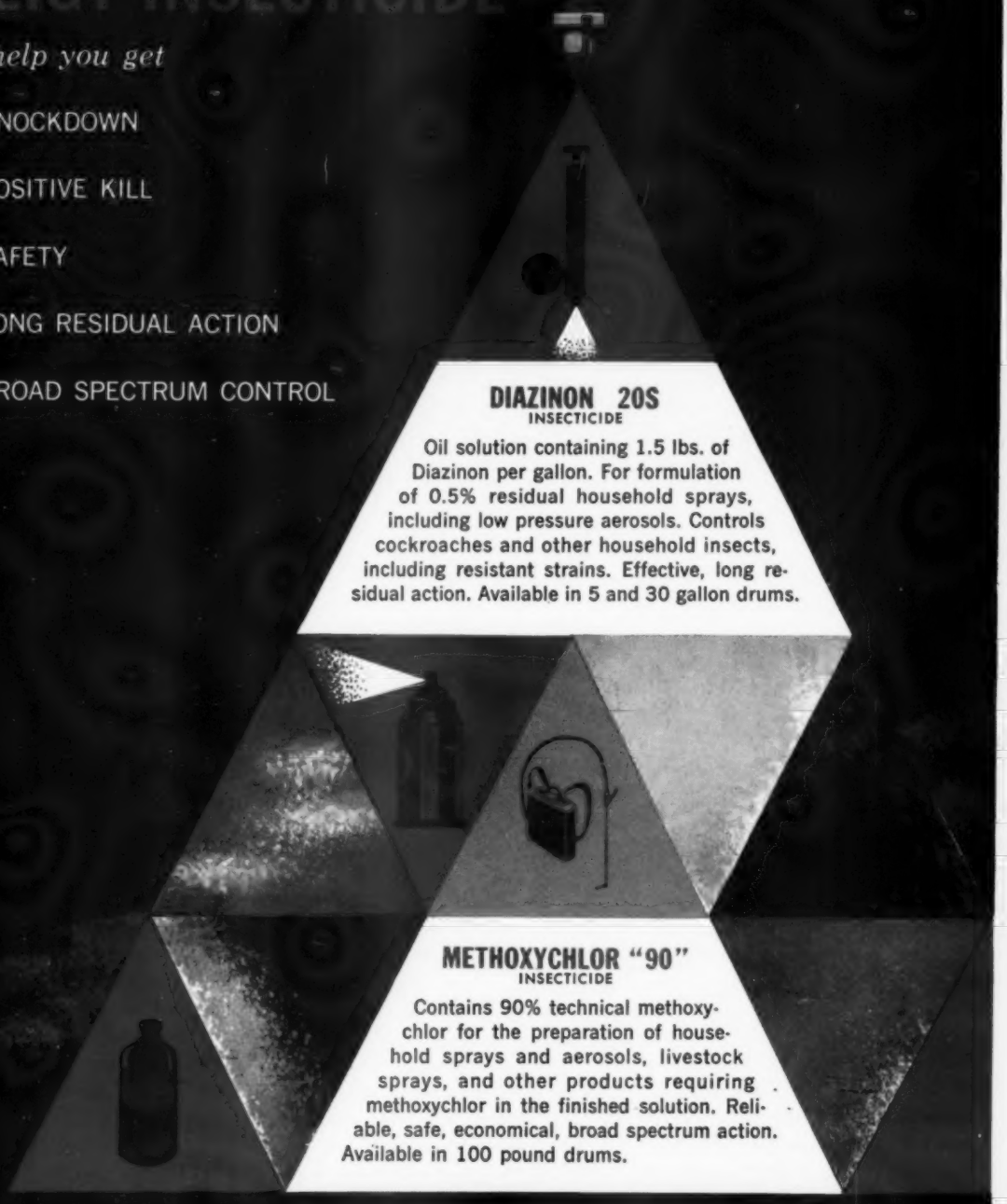
"A Quarter Century of Specialized Metal Closure Manufacture"

whatever your formulation need—
there is a

GEIGY INSECTICIDE

to help you get

- KNOCKDOWN
- POSITIVE KILL
- SAFETY
- LONG RESIDUAL ACTION
- BROAD SPECTRUM CONTROL



DIAZINON 20S
INSECTICIDE

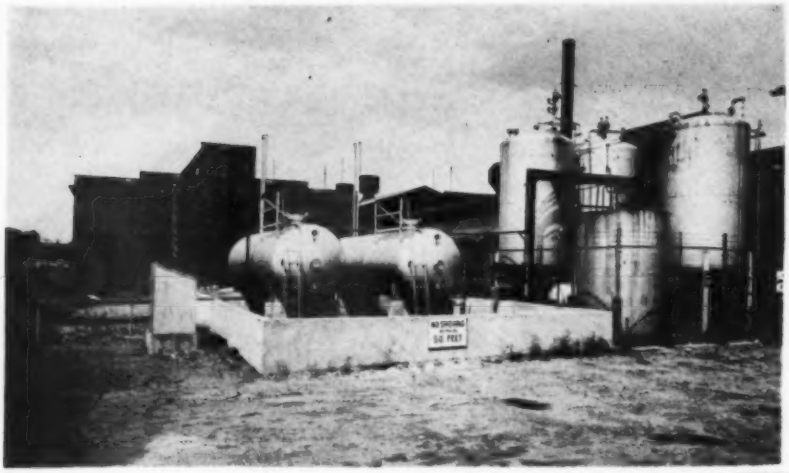
Oil solution containing 1.5 lbs. of Diazinon per gallon. For formulation of 0.5% residual household sprays, including low pressure aerosols. Controls cockroaches and other household insects, including resistant strains. Effective, long residual action. Available in 5 and 30 gallon drums.

METHOXYCHLOR "90"
INSECTICIDE

Contains 90% technical methoxychlor for the preparation of household sprays and aerosols, livestock sprays, and other products requiring methoxychlor in the finished solution. Reliable, safe, economical, broad spectrum action. Available in 100 pound drums.

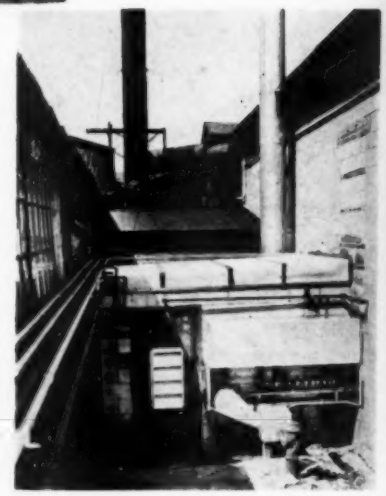
ORIGINATORS OF GEIGY DDT INSECTICIDES

GEIGY AGRICULTURAL CHEMICALS · Division of Geigy Chemical Corporation · Saw Mill River Road, Ardsley, N.Y.



Hydrocarbon propellant storage tanks at Powr-Pak are equipped with direct pipe line to railroad siding at left of photograph.

Below: Exterior of explosion-proof gassing room, which has hinged roof, fire brick masonry, and air recirculation system.



The Use of Hydrocarbon Propellants to Reduce Product Costs

By Milton Fowks
Director of Research
Powr-Pak, Inc.
Bridgeport, Conn.

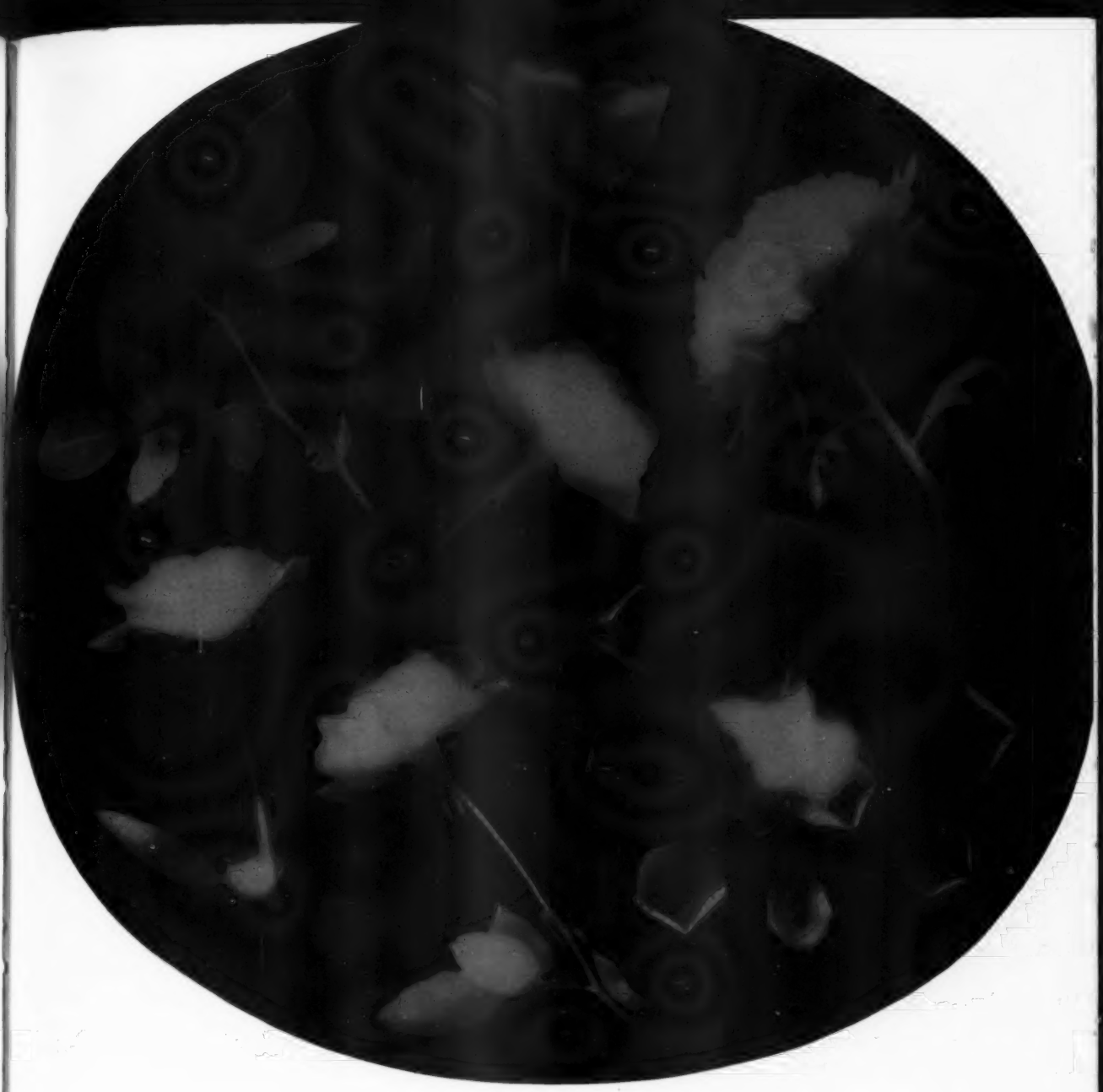
OF LATE the aerosol industry has expressed increased interest in the use of liquefied hydrocarbons as propellants for aerosol systems. Such hydrocarbons as n-butane, isobutane, propane (or blends of the latter two) have long been known to be adaptable as propellants, but have had limited use because of their excess flammability and the fact that they may chemically change the composition of the product.

At Powr-Pak recent work has indicated that *proper* substitution of a hydrocarbon for a fluorinated hydrocarbon can produce a very satisfactory aerosol system, with a considerable savings in cost and at *no* increase in the product's flammability.

During the shortages of World War II, consideration was first given to the use of a propane-butane mixture as a partial replacement for dichlordifluoromethane, but the idea never found much practical usage in the high pressure filling systems then employed for all aerosols. When the commercial low-pressure aerosol was conceived in 1947, the cold filling method proved more adaptable to high-speed production and was more or less adopted as the standard filling system in the industry. This immediately restricted the use of hydrocarbon propellants, since cold filling of these materials would have been extremely hazardous.

One of the prime examples of hydrocarbon substitution for "standard" aerosol propellants has been for a shaving cream formulation specifically created to circumvent patents covering the use of fluorinated hydrocarbons in a foam product. A real savings was effected with this hydrocarbon substitution, since only half as much propellant was needed to dispense the product. Next came use of hydrocarbon propellants in pressurized glass cleaners, followed several years later by similar use in furniture polishes. It's interesting to note here that later development of nitrogen and other compressed gases as propellants (for toothpastes, vitamins, glue and many other products) increased the scope of aerosol products, but did not affect propellant study on many of the established aerosol "best sellers."

OVER the past two years, propellant research at Powr-Pak has been concentrated on hydrocarbon substitution in such other high-volume products as insecticides, hair sprays and room deodorants. This research has revealed that these and other product types can be successfully formulated, so that the finished

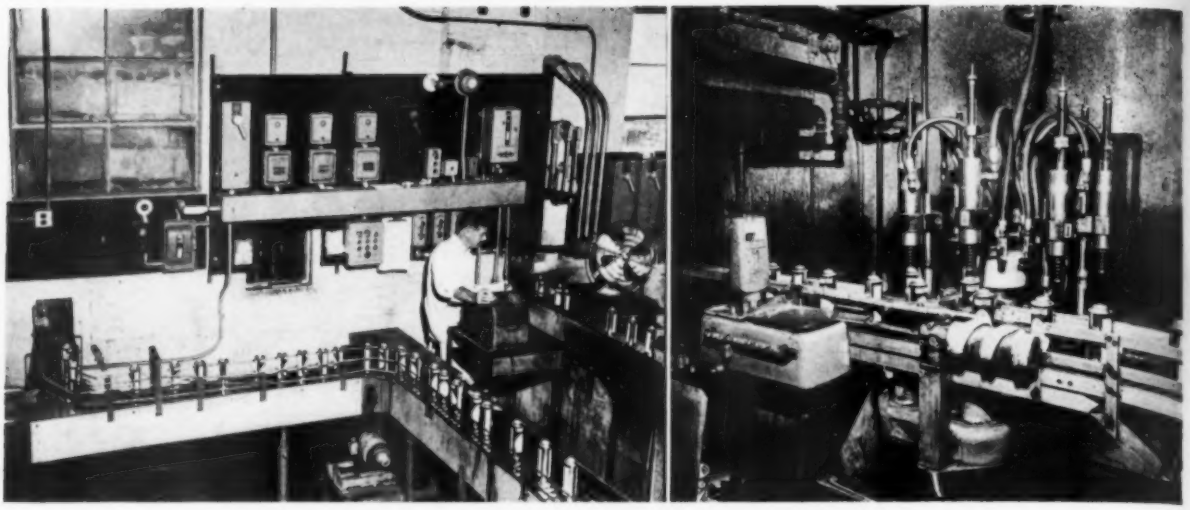


VARIATIONS ON A THEME BY NATURE

Begin with a standard of incomparable natural fragrance.
Add an intimate knowledge of chemistry's finest aromatics.
Then blend through the skill, experience and vivid
imagination of the master perfumer . . . and you have FLEUROMA'S
"variations on a theme by nature". . . fragrances that
forge new traditions in the art of creative perfumery.

FLEUROMA

NEW YORK PARIS LONDON SAO PAULO



Left: Interior view of main plant, showing filled containers at left going into gassing room and charged containers being returned for water-bath testing. Right: Eight-head rotary gasser is located in explosion-proof room.

product possesses all the characteristics of the pure fluorinated hydrocarbon formula, with the desired lower unit cost but *without* increase in flammability.

As might have been anticipated, the major problem encountered in this research project was how to formulate those products, containing solvent systems, to avoid this excessive flammability. Naturally, any increase in flammability would have increased the danger to the user and also have created added warehousing hazards.

After more than two years of research with several hundred formulations, this project has resulted in substantial success.

To begin with, a survey of many of the leading hair spray formulations currently on the market revealed that a number contain from 25 to 50% alcohol (in some cases even greater percentages were found). A flame projection test of the higher alcohol percentage products resulted in flame extensions of from 10 to more than 20 inches! Labels for these products were marked "flammable," and they apparently had passed all marketing regulations.

For our project these same hair sprays were reformulated with a mixture of fluorinated hydrocarbon and hydrocarbon propellants. The resulting flame extension tests showed a markedly reduced flame, in many cases under six inches. As a result of these tests, together with open and closed drum tests, the reformulated products were submitted to the New York Fire Department and to the ICC's Bureau of Explosives—both of which reported that those products submitted could be classified as "nonflammable" and would require no specific changes in labeling.

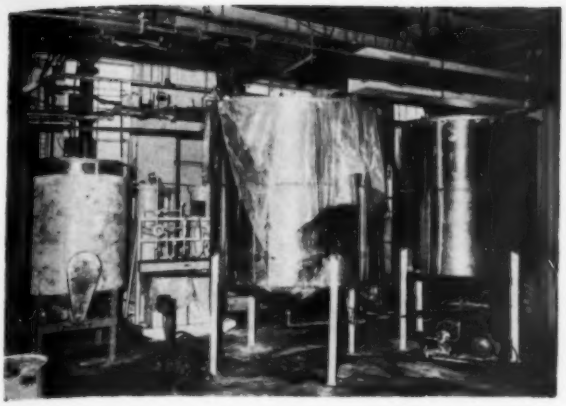
Perhaps even more important than the fact that these new formulations met the standards of these regulatory agencies is the fact that the consumer would receive a product in every way equal to the original — and at the same time the cost of the product in a 16-ounce container could be reduced by as much as three cents per unit. When this savings is projected over a run of a million hair spray containers, the resultant cost reduction of $30,000 can scarcely be overlooked by the prospective or actual marketer. It should perhaps be reemphasized that this $30,000 is saved without changing the product's effectiveness or cheapening it in any way. In this formulation, when the solvents and propellant evaporate, the *same* product ingredients are left on the hair in the same percentages as in the more costly product.

We have extended this work to many product types and consequently have developed basic reformulation standards. These would indicate that pure propane may also find extensive use as a partial propellant substitute. For instance, an aerosol insecticide meeting O.T.A. (Official Test Aerosol) standards, together with accepted standards for particle size production, has been formulated with this type of propellant.

Special Facilities

Proceeding from the product which can be formulated in the research laboratory to the realities of line production always creates a whole series of problems. For instance, although iso-butane and normal butane (and combinations of butane and propane) have been used before for aerosol packaging, the problem of handling high pressure propane in its pure state is a new one. At the Powr-Pak plant, approval from local authorities had to be gained to install multiple 6,000-gallon storage tanks outside and immediately adjacent to the plant. These tanks were installed next to the railroad siding where tank cars of these propellants could be transferred directly to the storage tanks without fear of contamination or loss to the surrounding atmosphere.

From the storage tanks, pipelines



For a hydrocarbon-propelled starch, Powr-Pak utilizes a 500-gallon heating kettle, 600-gallon-per-hour deionizing unit, and two 1500-gallon stainless steel tanks.

lead directly to an explosion-proof gassing room where an eight-head rotary gasser has been installed. This equipment allows positive control of the quantity of propellant gassed into every unit. This gasser, believed to be the first of its kind used for this type of propellant, operates at speeds of more than 120 cans per minute.

The problem of trapped air in the cans has been solved in two ways. First, propellant 11 is filled during the concentrate filling cycle and tends to "gas off" slightly before crimping, thus driving off the air. Second, the rotary crimper has an automatic vacuum system which purges any air remaining. In use of this purging and gassing equipment no difficulty has been encountered meeting the ICC regulations pertaining to pressure within the container.

The gassing operation is conducted in a separate explosion-proof room adjoining the main filling line. This building contains a ventilation system capable of exhausting the complete air volume of the room three times each minute. Both gassing area and main plant have Mine Safety detection devices to maintain a constant check on the level of hydrocarbon gases in the atmosphere. If the danger level is approached for any reason, an alarm sounds and the machines are automatically stopped.

Following the gassing operation, the filled and charged containers are brought by conveyor back into the main building, where they are handled in a manner similar to that of other aerosol products.

The safety with which these propellant combinations can be handled is illustrated by the fact that in over one year (and after handling more than 15 tank cars of the hydrocarbon propellants), there has not been a minute of lost production time nor a single employee injury attributable to hydrocarbon propellants.

From the research and production experience accumulated over the course of the last year, we are firmly convinced of the practicability of using these hydrocarbons in a variety of products. Evidence of our faith in this new system is provided by the extensive investment made in the storage facilities and filling and gassing equipment necessary to handle these propellants. Convinced that the future of the aerosol industry lies with a combination of increased quality and decreased manufacturing costs, the research is being continued to develop new formulations for both water and solvent based aerosols employing straight hydrocarbons, blends of different hydrocarbons and combinations of hydrocarbons and fluorinated hydrocarbons. ★

•

Valspar Approves Merger

Directors of Valspar Corp., Ardmore, Pa. aerosol paint marketer, and Rockcote Paint Co., Rockford, Ill., last month approved a plan calling for merger of the two companies. The agreement called for the exchange of 1¼ shares of Valspar common stock for each Rockcote common share and 3⅛ shares of Valspar common for each share of Rockcote preferred. Both companies are headed by R. J. Baudhuin.

HOW PMC SOLVED IT!

The curvature and flexibility of aerosol dip tubes forced many manufacturers to rely upon hand labor to insert valve assemblies into aerosol cans. Existing machines could not guide and insert the valves with the necessary accuracy and speed. Labor costs were extremely high.

PMC Machines designed for the job have changed all this. In one continuous automatic operation, valves are sorted from a bulk supply and assembled to tubing which is fed from reels. The dip tubes are cut to length then the valve assembles are placed onto the cans with the dip tubes accurately guided through the opening. Production speeds are as high as 150 to 200 per minute. The PMC Machine is adjustable for cutting various lengths of dip tubes and by a simple interchange of parts, containers of varioout sizes may be handled. Savings? The PMC Machine eliminates the need for inventory of valves of varying dip tube lengths. Labor costs? Only part time supervision.

•

Have you a similar production problem? Or, do you plan to introduce a package with an unusual closure that can't be capped or inserted with standard equipment? If so, PMC can help you. Just call or write for information.

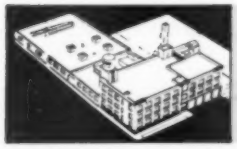
PMC INDUSTRIES
293 Hudson St., Hackensack, N.J.
Diamond 2-3684

only mother nature does a better packaging job

This is perhaps the ultimate in fine packaging. Attractive, functional, efficient. Even a zipper couldn't improve it! We readily admit that even with the advanced packaging techniques, modern equipment and time-tested skill we have at G. Barr & Company, Mother Nature—in her field—does a superior packaging job.

But AEROSOLS! That's a different matter! Private label aerosol manufacturing has been our field for over ten years. And if the hundreds of millions of perfectly formulated and filled packages we've made for marketers of famous brand name products doesn't convince you that we are tops in this specialized field, we're ready to prove it with a test run of a few thousand packages of your product. In other words: If Mother Nature doesn't do YOUR packaging, call on us!

G. BARR & COMPANY
Private Label Aerosols
GENERAL OFFICES: 3601 S. RACINE AVE.
CHICAGO 9, ILLINOIS



ACRES OF AEROSOL PACKAGING FACILITIES

news of pressurized packaging

Thonet Heads Puritan Research

The appointment of Theodore A. Thonet as research director has been announced by Puritan Aerosol Corp., Boston filler.

In his new position, he will direct and implement Puritan's expansion program in the fields of research and development operations and services.

Mr. Thonet was formerly associate research director at Puritan. Prior to that, he was a research director of Continental Filling Corp., Danville, Ill. Mr. Thonet, who has applied for several aerosol patents, is author of a recent informative article on gas chromotography in the aerosol laboratory, which appeared in *Aerosol Age*.

Mr. Thonet has a B.S. degree in chemistry from the University of Miami, and served in the United States Air Force from 1950 to 1953.

•

Johnson Swiss Subsidiary

A Johnson's Wax subsidiary has been established in Switzerland called Johnson's Wax Fabrik, A.G., it will be located in Weiningen, a suburb of Zurich, and will manufacture and sell a wide assortment of household, building maintenance and industrial products. These include waxes, polishes, insect repellents and insecticides, and car care products. For more than 30 years, Johnson's Wax products had been produced and marketed in Switzerland by a manufacturing distributor.

Directors of the subsidiary are Samuel C. Johnson, vice-president and international regional director for Europe; A. O. Fisher, International Division vice-president; Dr. Guido von Castelberg, of Switzerland; Eric Hohenberg, of France; Ernst Frey, general manager of the new firm, and Ernst Hirsig, production manager.

Mr. Fisher said a long-practiced Johnson's Wax policy of having its products manufactured and marketed by nationals will continue in Switzerland. "This policy provides employment for persons in the country where the products are sold and contributes to the nation's economy," he said.

•

Shukur to Curtis Post

Helene Curtis, Inc., Chicago cosmetics marketer, has appointed Edward K. Shukur to the newly-created position of director of products management of the Products Division. He was formerly product manager and product group supervisor of the company.

•

Pond's Plans New Merger

Chesebrough-Pond's, Inc., New York cosmetic firm, last month announced it has reached an "agreement in principle" to buy Northam Warren Corp. for an undisclosed sum. Northam-Warren has products in the manicure, deodorant, and cutlery fields, and last year had a net income of $1.1 million. Chesebrough-Pond's, marketer of "Vaseline" and other products, last year had total sales of $66 million, with earnings of $4 million. Both company's have subsidiaries in South America and Europe.

•

William F. Fischer Dies

William Franklin Fischer, former sales manager of Magnus, Mabee and Reynard, Inc., New York, died Sept. 15 after a prolonged illness. Services were held September 18th at the Fox Funeral Home, Forest Hills, L. I.

Starting in 1907 as office boy, Mr. Fischer steadily advanced in MM&R until at the time of his retirement several years ago, he was vice-president and sales manager. He will be greatly missed by his friends and associates in the essential oils industry. He is survived by two daughters and a stepson.

Bradley-Sun Names McCarthy

Appointment of Richard H. McCarthy, Jr., as vice-president in charge of sales has been announced by the Bradley-Sun Division, American Can Co., Hillside, N. J. Mr. McCarthy, who has been director of sales for the past 15 months, will be responsible for the sale of collapsible metal and plastic tubes, plastic squeeze bottles, aluminum impact extrusions, and other products made by the Division.

He joined Sun Tube Corp., a predecessor company, as a product manager in sales in 1955, after sales experience in other fields. After serving as a sales manager, he transferred to production work as manager of the Division's Washington, N. J. plant. Mr. McCarthy holds a degree in electrical engineering from the University of Pennsylvania, and did graduate work in marketing and accounting at the University's Wharton School.

•

Old Empire Buys Garde Drug

Old Empire, Inc., Newark, N. J., custom filler, last month announced the acquisition of the facilities of Garde Drug Co. of Philadelphia. The company earlier this year acquired Welton Laboratories, Newark drug marketer.

According to an announcement by John de Elorza, Old Empire president, the new acquisition will enable his company to offer expanded service and facilities for packaging of pharmaceutical powders, tablets and liquids. He indicated that the services would be available at both Philadelphia and Newark.

•

Named VP in New Firm

Dorothy Lamour, Inc., newly-formed New York cosmetics marketer, last month named Herbert D. Rosenthal, former president of Patricia Stevens Cosmetics, to the post of vice president in charge of sales.

Lowe, Lang Win Trophies at CMCS Golf Tournament

Gordon Lang, Conn. Chemicals of Canada (left), receives CMCS Trophy from George Flemming and Type M. Lowe, American Can Co. of Canada (left) receives Precision Valve Trophy from Ralph Legate.

GORDON LANG, president of Connecticut Chemicals (Canada) Ltd., and Type M. Lowe of American Can Co. of Canada Ltd. won the top awards in the first annual golf tournament of the Canadian Manufacturers of Chemical Specialties Association at the Highland Golf & Country Club in Aurora, Ontario on August 29. Although the course was hit by thunderstorms in the afternoon, most of the 41 golfers had already finished by the time the main storm hit.

Mr. Lang, who is also treasurer of the CMCS, won the CMCS trophy with a low gross of 72. Mr. Lowe won the special Precision Valve Trophy for a sparkling low net of 72. The CMCS trophy was presented by G. H. Wood, president of the CMCS and the Precision Valve trophy by Ralph R. Legate, Canadian sales representative of Precision Valve. George Flemmi past CMCS president was chairm of the golf committee.

Some of the other prize winn included:

Joseph McCullugh (Consolidated Alcohols Ltd.) — second low gross.

A. Breeze (Givaudian-Canada Ltd. second low net.

Lloyd Specks (Fritzsche Brother Canada Ltd.)—third low gross.

Robert Walingnatz (Chemcrest Corp.) — highest score on the third hole.

Cal Johnson (Bate Chemicals Ltd.) —longest drive—285 yards.

John Murphy (Continental Can Co. of Canada)—closest to circle.

Bruce Sleeman (DuPont of Canada Ltd.) — lowest score on sixth hole.

•

Shields to Heyden Newport

The Heyden Newport Chemical Corp., New York, has appointed C. H. Shields, Jr., manager of market research and development.

HERE'S WHAT IT TAKES . . .

to RUN CONTINUOUSLY for six months—3 shifts per day—every day—without one minute's downtime—OVER ONE MILLION CANS . . .

here is VERSATILITY . . . The JET-MOGENIZER will homogenize with precise controlled uniformity of dispersions and emulsions—cosmetics, food whips, insecticides, paints, pharmaceuticals and chemical specialties.

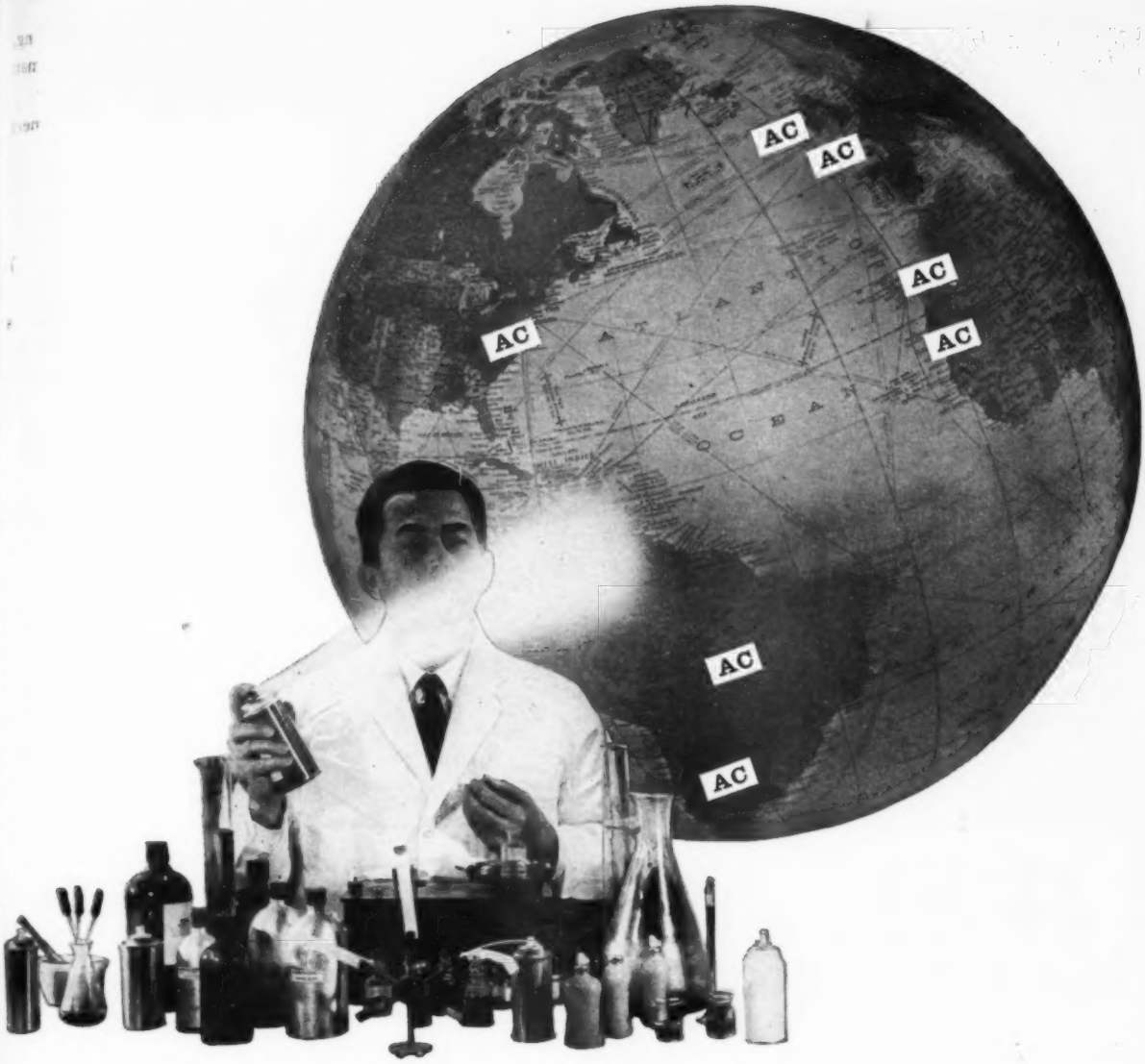
and SPEED . . . The JET-MOGENIZER is designed for continuous operation with capacities ranging from 150 to 500 g.p.h. It is a miracle machine for batch operations—is self cleaning—with only minutes loss of time between batches.

plus MATCHLESS HOMOGENIZATION . . . The technique that goes into the making of a matchless aerosol product is not something to be trusted to ordinary methods. In the JET-MOGENIZER the combined forces of IMPACT —INTERPARTICLE ATTRITION-VIOLENT TURBULENCE and ULTRA-SONICS have been designed right into the machine.

let us FREE-TEST YOUR AEROSOL . . . Before you finalize a new preparation, let our lab test-run a sample batch for you on a production model . . . No charge or obligation. Ask for our new bulletin.

Buschman Products, Inc.

114 East 40th St. **New York 16, New York**



Since 1768 the House of Chiris has dedicated itself to the Fifth Sense (Olfactive). In the development of Essential Oils, Floral Absolutes, Chemical Isolates, Synthetic Chemicals, and all those creations and specialties which combine industrial aromatics with natural products and produce fragrance, the House of Chiris has a cherished history. Today Chiris maintains laboratories headed by experienced chemists who have available to them not only the accumulated knowledge of generations of Chiris perfumers and chemists, but also the research facilities of six modern laboratories located in Grasse and Paris, London, Sao Paulo (Brazil), Buenos Aires (Argentina), and New York City. Whether Essential Oils, Isolates, or combinations thereof, are used as fragrance constituents by the perfumery, soap, cosmetics or allied industries, we are happy to be consulted.

ANTOINE CHIRIS CO., INC. 220 East 23 Street, New York 10, N. Y.

MANUFACTURING LABORATORIES

GRASSE • PARIS • LONDON • SAO PAULO • BUENOS AIRES

REPRESENTATIVES WORLD-WIDE

BIG NEWS! NOW DELIVERING ONE-PIECE ***DOUBLE STERILIZED*** ALUMINUM AEROSOL CANS AT STEEL PRICES OR LOWER!

NO SEAMS at the top, bottom or sides to collect dust, dirt or corrosion . . . no side seams to rust, leak or come apart. VICTOR containers are *EXTRUDED*, all *ONE PIECE*.

ALUMINUM, the magic metal that makes your Aerosol container a superior one, because Aluminum is practically defect free, light, strong, easily formed into any size or shape.

LIGHTER WEIGHT to make shipping less expensive, handling easier, storing higher, lighter weight filled for easy mass displaying on counters, in stores, in show windows.

EASIER TO PRINT your sales message on the outside (including the shoulders) in any color or our anodized gold, silver, bright bronze, colors . . . easier to coat the inside, to protect your product.

PERFECTED AND AVAILABLE NOW from our high speed, automated, low-cost production lines in large quantities, competing with any other metal, with any other brand.

ONLY VICTOR'S EXCLUSIVE PROCESS STERILIZES EACH CAN TWICE; The Second Sterilization Is Done Just Before Packing To Provide The Maximum In Sanitary Protection

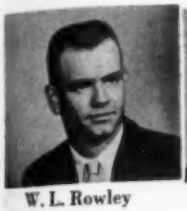
EXPERIENCE? *More than 200,000,000 aluminum containers a year for more than 30 years, for the finest brands in the world.*

UNITED STATES CAN CORPORATION

Subsidiary of VICTOR METAL PRODUCTS CORPORATION, Newport, Arkansas

Peterson Realigns Staff

Peterson Filling & Packaging Co., Danville, Ill., major aerosol contract packager, recently announced several



W. L. Rowley

J. K. Shea

L. Ligocki

Mrs. Lambert

organizational changes. J. K. Shea was promoted from Eastern sales manager to sales manager; William L. Rowley, from plant superintendent to plant manager; and Larry Ligocki to the newly-created position of chief machinist.

A graduate of St. Louis University, Mr. Shea joined Peterson Filling in 1955 after several years with the sales department of another filling company. Mr. Rowley who started with Peterson in 1955 as quality control supervisor, replaces Julius Hegeler, who has assumed full-time duties as treasurer. Mr. Ligocki joined the company in 1956 after many years with the Modern Machine Co. of Danville.

Also announced was the addition of Mrs. Marie Lambert to Peterson Filling's research staff. Until recently, Mrs. Lambert was a research supervisor at Prairie States Oil and Grease Co., Danville, a position she held for six years. Prior to that time, she had been associated with Michael Reese Research Foundation as a specialist in the fields of hematology and urology and their application to various pharmaceutical products. She holds a B.S. degree from the University of Wisconsin (1949).

Other plant appointments include Robert S. Black as foreman of the shipping department and Robert Rowley as foreman of the receiving department. David L. Parker has been appointed chief chemist and Roy Bush is quality control supervisor.

Peterson Filling & Packaging Co. was established by H. E. Peterson, president, and lists as its company officers R. J. Peterson, vice-president; E. C. Hegeler, secretary; Montfort A. Johnsen, director of research and J. P. Peterson, purchasing agent and office manager.

•

Cuba Seizes Schering Subs.

Schering Pharmaceutical Corp. of Cuba, S.A., 19-year-old subsidiary of Schering Corp., Bloomfield, N. J. drug manufacturer, has been seized by the Cuban Government as part of a continuing harassment of American business activity in that country. Originally founded as a marketing branch of the company, the Cuban subsidiary recently commenced local manufacture of Schering drugs in line with Cuba's policy of increased home production.

Schering President Francis C. Brown charged that the appropriation of property without compensation is a violation of international law and that the Cuban people will be the principal losers because the result will be to cut off the Cuban company from the parent company's research, know-how, and raw materials.

Later in the month came word that the $7 million plant operated by Owens-Illinois Glass Co. near Havana had also been seized by the Cuban revolutionary government.

•

Pennsalt Appoints Dukert

Andrew A. Dukert has joined the recently-organized Research Products Development Department of Pennsalt Chemicals Corp., Philadelphia, as a plastics application engineer. He will concentrate on the commercial applications of such plastics as Pennsalt's new polyvinylidene fluoride resin "RC-2525." A veteran of 25 years in the plastics industry, Mr. Dukert was most recently consultant for engineering and manufacturing for Acme Plastic Products Co., Doylestown, Pa.

Alpine

NEW
Fragrances
and
Neutral Scents for
Aerosol Products Are
Continually Developed
in Our Modern
Aerosol Laboratory

Fastest Growing
Fragrance House.
Try Our Quality Products
and Prompt Service.

ALPINE
AROMATICS
INCORPORATED
Metuchen, N. J.

CHECK YOUR AEROSOL PRODUCT BELOW!

Your SILICONES MAN Can Show You How To Make It Sell Better

The better the product performs, the greater the demand for it and the bigger your profits.

UNION CARBIDE Silicones make polishes easier to apply, improve gloss. They add smoother flow, better results to cosmetics . . . give lubrication, spreadability, water repellency to household products . . . speed release of rubber, plastics, and metals from molds . . . give paint reduced surface tension, better flow.

The following is a brief list of aerosol products that silicones can upgrade with very little cost to you—and large benefits to your customers. The UNION CARBIDE Silicones Man will tell you how. Check your products. Mail the list to us. Silicones Division, Union Carbide Corporation, 270 Park Avenue, N. Y. 17, N. Y. *In Canada:* Union Carbide Canada Limited, Bakelite Division, Toronto 12.

CHECK LIST

Household Products
- ◯ Window Cleaner
- ◯ Oven Cleaner
- ◯ Household Lubricant
- ◯ Upholstery Cleaner

Cosmetics
- ◯ Hair Spray
- ◯ Sun Tan Lotion
- ◯ Deodorant
- ◯ Hand Lotion

Polishes
- ◯ Furniture
- ◯ Automobile
- ◯ Shoe

Industrial Products
- ◯ Mold Release Agents
- ◯ Paints and Lacquers
- ◯ Rubber Lubricant

A DROP OF UNION CARBIDE L-45 SILICONE OIL ON ANY AEROSOL VALVE WILL INSURE SMOOTHNESS OF OPERATION.

Unlocking the Secrets of Silicones
Rubber, Monomers, Resins, Oils, Emulsions

UNION CARBIDE **SILICONES**

UNION CARBIDE is a registered trademark of Union Carbide Corporation.

Mark Biddison Dies at 68

Mark M. Biddison, 68, former president of Allied Chemical's General Chemical Division, died Sept. 18 at Sarasota, Florida where he lived since his retirement in 1957.

Mr. Biddison, whose career with General Chemical spanned 39 years, was president from 1952 to 1955. Earlier he had served as executive vice president and as a vice president for eight years.

According to the company, General Chemical experienced its most active growing period during the post-war years under Mr. Biddison's leadership. Its sulfuric acid, hydrofluoric acid and aluminum sulfate facilities were increased by addition of many new plants and by enlargement of facilities. The same period saw the rapid commercialization of its "Genetron" line of refrigerants and aerosol propellants as well as the acceleration of General's fluorine chemicals program, with introduction of such major products as aluminum fluoride, boron trifluoride and sulfur hexafluoride. The company also made its entry into the atomic energy field with production of aluminum nitrate at its Kennewick, Washington Works for the Hanford AEC plant.

Mr. Biddison joined the division's sales department in 1918 where he later became manager of the Cleveland Office and division sales manager. From 1934 on, he was successively assistant general manager and general manager prior to becoming vice president in 1947.

He is survived by his wife, Mary Ellen, and son, Mark.

•

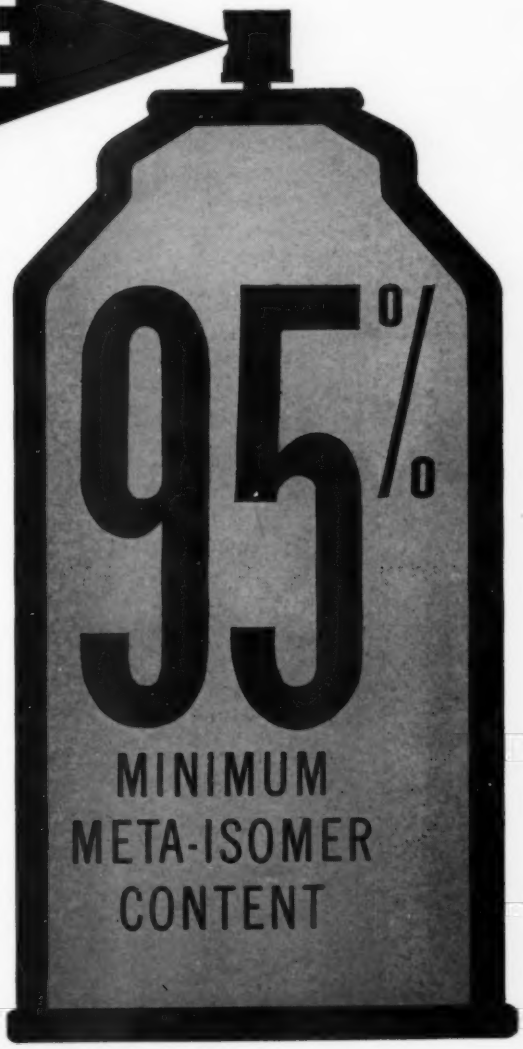
Fleuroma to New Plant

Fleuroma, Inc., last month occupied its new plant at 43-23 Dreyer Ave., Long Island City 1, New York. The new telephone number is: RAvenswood 1-8282.

Extensive renovations have been in process since early 1960, including modern space designs for perfume laboratories, and aromatic chemical manufacturing. This plant provides for considerable room for further expansion, for which plans are currently under way.

The MOST EFFECTIVE Insect Repellent!

DIETHYLTOLUAMIDE



Cowles DETAMIDE® 95

Cowles DETAMIDE 95 is superior in color, odor characteristics, and stability. No unpleasant odor . . . water white . . . and stays that way. We guarantee a minimum 95% meta-isomer content — the isomer that has the **most repellency!**

Cowles has the capacity to supply your needs immediately and steadily. Write for technical data and prices on your letterhead.

Sold in 5-gallon or 55-gallon drums.

1885 — 75th Anniversary — 196

Cowles CHEMICAL COMPANY
Cleveland 3, Ohio

MGK Names Export Mgr.

McLaughlin Gormley King Co., Minneapolis, Minn., manufacturers of pyrethrum extract and insect repellents, recently announced the appointment of William D. Gullickson as manager of international sales. Following World War II, Mr. Gullickson, an Air Force veteran, graduated from Univ. of Minnesota with a degree in journalism and advertising. Prior to joining MGK in 1959, he held positions with the Hearst Corp., Magazine Division, and Conover Nast Publishing Co., Chicago. In preparation for his work with the company's overseas representatives, Mr. Gullickson has spent the past year in an intensive study of the firm's products and processes.

•

Wallace & Tiernan in Merger

Wallace & Tiernan, Inc., Belleville, N. J., marketer of "Desinex" aerosol foot medication, will broaden the base of its pharmaceutical activities by merging with R. J. Strasenburgh Co., Rochester, N. Y. Strasenburgh will become a second drug division of Wallace & Tiernan, which already has the Maltbie Laboratories Division. Edward G. Strasenburgh and Robert J. Strasenburgh II will become directors of the parent firm. The acquisition was accomplished by an exchange of common stock.

•

Alberto-Culver Consolidates

Alberto-Culver of Canada, Ltd., last month began operations in its new 10,000 square-foot plant at Oshawa, Ontario. The new plant will consolidate distributing, formerly at Oakville, Ont., and manufacturing, formerly at Montreal. It will make hair spray and other aerosol and non-aerosol hair care products.

According to Harold D. Mindlin, Canadian general manager, the company hopes to have a plant three times the size of the present one within five years.

•

Fay Joins Wrisley Co.

Walter G. Fay, formerly in the market research department of the Toni Co., has joined the Allen B. Wrisley Co., Chicago, as manager of market research and advertising.

Plan Record Pyrethrum Crop

The Pyrethrum Board of Kenya has licensed 10,300 tons of Kenya pyrethrum production for the year which began July 1, 1960. This is the highest production figure ever licensed by the Board, the nearest to it having been the figure of 7,409 produced in 1945 under the British Government wartime guarantee.

Preliminary figures indicate that production for the year ending June 30 reached about 6,300 tons, with a market value of £2,196,286 ($5,149,607). The 1960-61 crop is expected to have a value of nearly £3½ million.

•

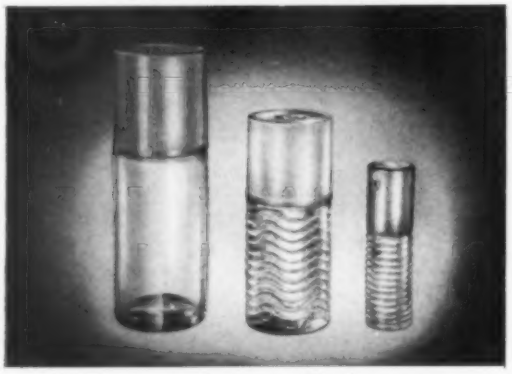
Aerosol Line on British TV

On Wednesday, August 10, the British Broadcasting Corporation produced a live television program in Welsh, entitled "Industry in Wales." During this program a visit was paid to the works of Elephant Chemical Co., Ltd., Barmouth, Merionethshire, and the filling of aerosol containers was televised.

WAIT before you buy

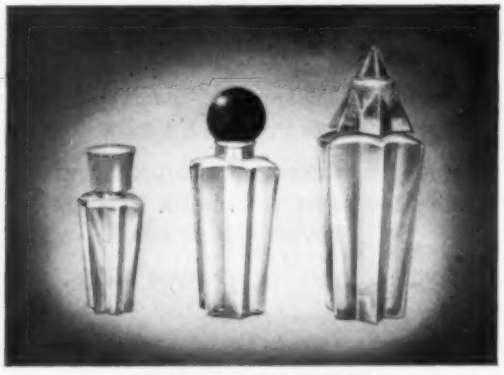
Enhance your product with these distinctive designs.

UNCOATED AEROSOL



A-800 3 oz. uncoated glass aerosol bottle.
A-700 1½ oz. uncoated glass aerosol bottle.
A-600 ¼ oz. uncoated glass purse size aerosol bottle.

STAR BOTTLE



L-1100 ¼ oz. star glass bottle.
L-1200 ½ oz. star glass bottle.
L-1300 1 oz. star glass bottle.

NARVA PRODUCTS CORP., 201 Verona Ave., Newark, N. J.
N.Y.C. WOrth 4-7871 Write or call for samples and prices. HUmboldt 4-2123

FRAGRANCE APPEAL for your AEROSOL PAINT !

One of the largest potentials in the expanding field of pressurized products is the market for aerosol paints. Combining the convenience and tidyness of the aerosol package with the nation's current "do it yourself" mood, spray paints for touching up toys, cars, furniture, woodwork, appliances and a host of other household tasks have a sure-fire-appeal. With their primarily indoor function, it is particularly important for aerosol paints to be either odorless, or pleasantly scented. This involves both masking and/or reodorizing the solvents and the resins, at the same time keeping the total formulation compatible with propellent and container. The D&O Aerosol Testing Laboratories have successfully resolved this problem for a number of different aerosol paint products, including *lacquers, enamel, paint removers* and *solvent combinations.* This experience, and the facilities of the labs, are at your service! Consult D&O.

"Essentially for you"

D&O ESTABLISHED 1798

DODGE & OLCOTT, INC.
180 VARICK STREET • NEW YORK 14, N.Y.
Sales offices in Principal Cities

Essential Oils • Aromatic Chemicals • Perfume Bases • Flavor Bases • Dry Soluble Seasonings

assured protection from moisture when you specify U.S.I. ANYHYDROUS ETHYL ALCOHOL FOR AEROSOLS

Moisture that can't get into your product can't cause trouble—such as hydrolysis . . . corrosion . . . formulation instability . . . precipitation of water-insolubles . . . valve clogging—all causes of unhappy customers and lost sales.

With anhydrous ethyl alcohol from U.S.I., your troubles with moisture are minimized. That's why U.S.I.'s anhydrous S.D.A.-40 is such a widely used solvent for hair sprays, and cosmetic and toiletry aerosol formulations. All other U.S.I. Specially Denatured Alcohol formulas are available in anhydrous grades too.

U.S.I.'s *anhydrous* Specially Denatured Alcohol formulas have these other advantages:

- excellent solvent power with commonly used aerosol ingredients.
- compatibility with wide variety of propellants.
- no objectionable odor.
- well known antiseptic properties.
- low toxicity, of course.
- prompt delivery from U.S.I.'s nation-wide network of distribution points.
- U.S.I. technical service assistance on any specific aerosol problem you may have.

Write for technical data and prices.

U.S.I. INDUSTRIAL CHEMICALS CO.
Division of National Distillers and Chemical Corp.
99 Park Ave., New York 16, N. Y.
Branches in principal cities

Colgate, Carter Hit FTC Charges

The Colgate-Palmolive Co. and Carter Products, Inc., both cited by the Federal Trade Commission for deceptive advertising practices, have both issued statements in reply to the FTC citations criticizing the charges.

Colgate, told to stop making claims of an "invisible protective shield" for its "Colgate Dental Cream with Gardol," denied it ever "claimed or intended to imply complete protection against tooth decay." The company statement said the "the degree of protection afforded was *not* in question, since the FTC did not object to clinical evidence submitted by Colgate that brushing the teeth regularly with Colgate Dental Cream will reduce the formation of new cavities to a degree as great or greater than that claimed by any competitive dentifrice."

Carter, cited because its "Rise" television commercials unfairly disparage competing shaving lathers, complained that the FTC citation "fails entirely to take into consideration the practical limitations imposed by the time element involved and expediencies necessitated by photographic reproduction used in television." Perhaps recognizing that this defense has failed to impress the FTC in a previous citation of Colgate's sandpaper shaving commercial, Carter then requested that the complaint be dismissed on grounds that the challenged television commercial has been permanently withdrawn from the air.

•

Coty Names David Mayer

Coty, Inc., New York marketer of aerosol and conventional perfumes and colognes, last month appointed David Mayer to the post of fragrance product manager as part of its expanded marketing program for these products. Formerly advertising director, he will have responsibility for L'Aimant, Emeraude, L'Origan, and Paris products, as well as the firm's other fragrances and fragrance accessories.

see a LABELETTE LABELER

- For Easy Operation on Round Containers
- Quick Adjustment
- Fast-Cleaning
- Production Plus

See a Demonstration—

Rather than speak of our machines' merits—we would like to show you!

Specifications: Container sizes — 1½ oz. to 1 gal.
Container types — glass, tin or fibre
Label types—face, spot or wrap

LABELETTE COMPANY

216 S. Jefferson St. Chicago 6, Ill.
FRanklin 2-1215

Call our nearest sales office

East
Boston—Kirkland 7-9312
New York—Barclay 7-7026
Philadelphia—Jefferson 5-0750

South
Atlanta, Ga.—Melrose 4-0122

Central-West
Chicago, Ill.—Franklin 2-1215
Detroit, Mich.—Vermont 8-6475
St. Louis, Mo.—Jefferson 1-2615
Minneapolis, Minn.—Federal 8-0761
Des Moines, Iowa—Cherry 401-49
Omaha, Neb.—Atlantic 1181
Oklahoma City, Okla.—Central 5-9447
Dallas, Texas—Hamilton 1-2168
San Antonio, Texas—Capitol 7-6126
Los Angeles, Calif.—Capitol 2-5101
San Francisco, Calif. Glencourt 2-1011
Denver, Colo.—GE 3-3722
Portland, Ore.—Capitol 3-1422
Albuquerque, N. M.—Chapel 3-4707
Louisville, Ky.—Twinbrook 5-0865

Canada
T. C. Fenton Limited
Simcoe, Ontario—Phone: GA 6-3310

Foreign
Estes Co.
247 Park Ave., New York, N. Y.
Phone: Yukon 6-5280

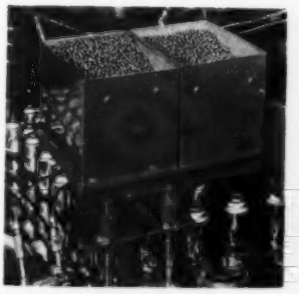
here is a
PRODUCT FILLER
which leading
AEROSOL PAINT PACKAGERS
have been using with
outstanding success

Simply set dial to desired fill for long or short runs

- available in single or multiple spigots
- high or low viscosity products
- adjusts to different heights
- stainless steel housing

MANUAL & AUTOMATIC
FILLING EQUIPMENT
BUILT TO SPECIFICATIONS

the simplicity of
the design of this
PELLET DISPENSER
means long, trouble-free
service



- completely automatic
- dispenses two steel balls or one glass marble & is adjustable to various sizes of either
- easily adapted to your line
- stainless steel housing
- approx. size: 12" l. x 8" w. x 8½" d.

Jet SPECIALTY CO.
2800 SOUTH PARK
CHICAGO 16, ILLINOIS

schimmel

for
perfume compounds for
aerosol products

Our aerosol laboratory will be glad to give assistance on odor problems connected with aerosols.

schimmel & co., inc.
newburgh, new york

TGA Lists Schedule for Scientific Section Meeting

THE TOILET GOODS Association last month announced the program for the meeting of its Scientific Section on Wednesday, Nov. 30th, in the Sert Room of the Waldorf-Astoria Hotel, New York. The program is as follows:

An Instrumental Method for Determining Human Hair Roughness and Its Application to Measuring Changes in Roughness, by Irene White, John H. Breck, Inc.

Evaluation of Liquid Shampoos in Relation to Dyed or Tinted Hairs, by Philip Rosmarin, Rosmarin Laboratories.

Studies on the Darkening Action of Dihydroxyacetone, by Peter Flesch, M.D., Ph.D., and Elizabeth C. Jackson Esoda, Dept. of Dermatology, University Hospital, University of Pennsylvania.

Some Analytical Applications of X-ray Fluorescence Spectrometry, by G. Robert Clark, Director, Division of Cosmetics, Food and Drug Administration, Department of Health, Education and Welfare.

Application of the H. L. B. System to the Solubilization of Essential Oils, by S. J. Strianse and Monroe Lanzet, Yardley International Research Laboratories.

Studies on the Absorption of Simple Dye Stuffs by Hair, by Stanley Brechner and Martin M. Rieger, Warner-Lambert Research Institute.

Change in Ultra-Violet Absorption Spectra with pH-Use in the Analysis of Toiletries, by Donald E. Dean, Robrt Suffis and Adele Levy, Analytical Development Laboratory, Shulton, Inc.

Specialization, the Key to Formulating Negro Cosmetics, by Edward Sagarin and Franklin H. Cooper, Lena Horne Beauty Products, Inc.

Maryland Packaging Show

The Maryland Division, Society of Packaging and Handling Engineers, will hold its sixth annual Eastern Industrial Packaging and Handling Show at the Fifth Regiment Armory, Baltimore, Oct. 24-25. Commercial exhibitors will display the newest developments and designs in industrial packaging materials, handling equipment and handling techniques. Public service exhibitions will be sponsored by the military, the Post Office Department and by trade and other organizations whose activities have a bearing on materials packaging and handling.

Visitors are cordially invited. Admission is free. Exhibition hours: October 24, five to 10 P.M.; October 25, noon to 9 P.M. Additional information may be obtained by writing W. A. Yockel, c/o Davison Chemical Division, W. R. Grace & Co., Baltimore 26.

•

Maloof Joins Colgate

The appointment of Richard Maloof to the research and development department has been announced by the Colgate-Palmolive Company's Toilet Articles Division, New York. Mr. Maloof, who recently received a B.S. degree in veterinary bacteriology from Rutgers University, joined the staff of the bacteriology laboratory at the Colgate-Palmolive research laboratories in Jersey City.

•

Completes New Production Line

Refillo-Whip Division of Gruenewald Manufacturing Co., 16 Converse Ave., Newton 58, Mass., recently completed installation of a fully automatic production line to make whipped cream equipment for the food service field. Key product is a refillable, high-pressure cartridge, said to be the first of its kind in the country, which is permanently affixed to the whipped cream charger to refill it automatically. The company also manufactures a new whipped cream dispenser and makes a whipped cream fortifier.

•

Vick Studies New Name

Pending approval by the stockholders, the 55-year-old Vick Chemical Co. will change its name to "Richardson-Merrell, Inc." The new name is derived from that of the company's founder, Lunsford Richardson, and the William S. Merrell Co., acquired by Vick in 1938. The stockholders will vote on the name at the annual meeting on Oct. 18.

An invitation to opportunity in the aerosol field

JOIN THE CSMA

The Chemical Specialties Manufacturers Association is an active organization of people and companies with the same business interests and objectives as you. It is dedicated to producing better products, expanded markets and improved selling methods for aerosols in all fields including:

- **Cosmetics**
- **Pharmaceuticals**
- **Foods**
- **Insecticides**
- **Paint**
- **Room Deodorants**
- **Other household pressurized products and related chemical specialties**

As a member, you can help further these objectives because it's a hard working organization — and reap even greater benefits from the combined efforts of total CSMA membership.

Scientific Research. The CSMA actually establishes laboratory methods for testing.

Legislative Help. Of utmost importance today, the CSMA alerts its members to pending legislation that may affect them. They also work closely with the Federal and State governments on standard specifications . . . labeling . . . and the development of model bills.

Market Help. The CSMA keeps its members abreast of the markets and its trends through an annual survey of production in each of its six divisions.

Why not join forces with those whose objectives parallel your own? For more information about the CSMA and how you can join, write: Chemical Specialties Manufacturers Association, 50 East 41st Street, New York 17, N. Y.

CHEMICAL SPECIALTIES MANUFACTURERS ASSOCIATION, INC.

AEROSOL DIVISION

Cooper Joins Horne Firm

Franklin H. Cooper, who formed Embassy Laboratories, Inc., private label cosmetic manufacturers, has resigned as secretary-treasurer to become executive director of Lena Horne Beauty Products, Inc., New York, an international organization marketing cosmetics primarily to the dark skinned peoples of the world.

Mr. Cooper, who was associated with the aerosol and essential oil industries prior to the formation of Embassy Laboratories, will assume complete responsibility for the development and design of the entire Lena Horne line. Among other duties, he will be in charge of purchasing, coordination, and manufacture and sales, as well as new product development. In addition, he will periodically confer with local and district managers to review all aspects of the marketing and acceptance of the line.

According to an announcement from Edward Sagarin, president of Embassy Laboratories, Mr. Cooper will continue to serve on that company's board of directors and remain a substantial stockholder, thus making possible coordination between the manufacture and marketing companies.

•

Mendoza Visits Europe

Robert Mendoza, vice-president of Antoine Chiris Co., New York, has just returned from a visit to the European operations of the company at Tadworth, England, and Grasse, France. In France he visited the firm's plantations and distilleries currently engaged in producing Lavender and Lavandin crops.

He reported that the 1960 Lavender crop is very good, qualitatively as well as quantitatively, and that French producers are successfully modernizing and improving the efficiency of Lavender production. Lavandin Oil production, he noted, is somewhat off this year because of weather conditions and lowered production by independent growers. He attributed this to the low prices of Lavandin, but noted that Chiris' Lavender and Lavandin plantations at Puberclaire were producing at peak efficiency.

•

ConCan Consolidates Office

Continental Can Co., Inc., New York, last month announced a consolidation of its St. Louis offices at 232 S. Meramec Ave., St. Louis 5. Included in the consolidation are the Metal Sales, Hazel Atlas Glass, and Boxboard and Folding Carton Divisions, as well as the District Credit Office, the Customer Research Department, and the Bond Crown & Cork Division.

•

Henne Joins Worrell-Consol.

Ed Henne has been appointed vice-president in charge of sales by the Worrell - Consolidated Laboratories, Inc., St. Louis manufacturer of chemicals for industrial and consumer products. He will be in charge of sales promotion, marketing, and product development. He was formerly with the Forest City Manufacturing Co.

Newman-Green Names Ducey

Newman - Green, Inc., Addison, Ill., manufacturer of aerosol valves, has announced the appointment of Fred B. Ducey as sales correspondent. He will be responsible for customer inquiries, general sales liaison work, and will be located in Newman-Green's Addison headquarters. Mr. Ducey, a veteran, is a graduate of the University of Illinois.

•

Mich. State Elevates Goff

Dr. James W. Goff has been made a full professor by The School of Packaging at Michigan State University, Lansing, Mich. According to the university, this marks the establishment of the first full professorship in the packaging field.

•

Reidy Appointed by Yardley

Yardley of London, Inc., New York, has elected John J. Reidy to the newly created post of vice president in charge of marketing. He had been with Schick.

PRODUCTS
THAT WORK BEST
DEPEND
ON ACTION
Manufacturers with the out-in-front products specify ACTION PLASTICS dip tubing more than any other brand. The reason is obvious to anyone who has experienced our consistently reliable performance.
We make more than 150 different tube types ... in varying diameters, wall thicknesses or formulations.
Write for free samples and recommendations.
DIP TUBING FOR
AEROSOLS
ATOMIZERS
SQUEEZE BOTTLES
LOTION PUMPS
GARDEN SPRAYS
ACTION PLASTICS, INC.
50 CALIFORNIA AVE.
PATERSON 3, N. J.
Subsidiary of Colorite Plastics of New Jersey, Inc.

WORLD-WIDE RESOURCES

WORLD-WIDE SERVICES

ROURE-DUPONT

AEROSOLS

ORIGINAL AND EXCLUSIVE
FRAGRANCE CREATIONS
FOR SPECIALIZED PRODUCTS

137 YEARS' experience as primary producers of Essential Oils and Aromatic Chemicals gives us unexcelled knowledge of the reactions and vagaries of these products.

We have been leaders in the creation of Internationally renowned original Fragrances and their incorporation in all Cosmetic Products including Aerosols.

An O.K. by our Laboratories here and abroad is assurance that your Aerosol presentation will be professionally tested for consumer acceptance, diffusion qualities, compatibility and all other technical requirements.

ROURE-DUPONT, INC.

Sole Agents for the United States and Canada for
ROURE-BERTRAND FILS et JUSTIN DUPONT, Paris, Grasse

CHICAGO
510 North Dearborn

366 Madison Avenue, New York
• MURRAY HILL 7-5830 •

HOLLYWOOD
5523 Sunset Blvd.

Ethel Walsh Is Featured on Network Radio Program

ETHEL WALSH, vice president of Aerosol Techniques, Inc., and one of the ranking woman executives in the pressure packaging field, was featured in a nation-wide story released by United Press International and on the "Emphasis" program of the NBC radio network in August.

The UPI story, written by Gay Pauley, was published by leading newspapers across the country.

Merrill Mueller, the well-known NBC newscaster, wrote and broadcast the "Emphasis" commentary, which turned out to be first-rate public relations for the aerosol business.

Here is what Mr. Mueller said:

Several years ago, an old friend of mine and a former business executive told me to keep my eye on a lady named Ethel Walsh. At the time, both of them were working for a brass company (Bridgeport Brass) and I wondered how a woman could be that influential in a business really reserved for tycoons.

Gas, he said, packaged gas. If anybody makes the world smell prettily with a spray gun, it will be Ethel.

Well, last week, out comes the confirmation of that prediction and of Ethel's future.

She is now executive vice-president of an outfit that specializes in packaging all kinds of scent in small hand bombs that become spray guns. This idea may be a far cry from the old fashioned flit gun and it is. Scented spray guns are now a multi-million dollar business ranging from glamourous perfumes, to the latest, just plain ordinary starch.

Why in a spray gun? Well, it's more economical that way for the user, in the first place, and it's more practical for the packager in the second place. Moreover, consumer research shows that people will be more likely to try a new scent if they can spray it, whereas they are tempted to decline the idea if they have to dab it on with a bottle stopper. Frankly, with the way sprays are being used today, only the most expensive perfumes can be applied with a stopper.

What comes in sprays now?

Well, here are a few examples, most developed by Miss Walsh for her present company, which pioneered with the idea of a DDT spray bomb for household use. That, too, was scented, when the original fly-killing mixture proved to pungent.

Now, they have a stationary scent, this one for the Victorian idea which again is catching on, of ladies perfuming their letters.

Then there's the cedar scent, which makes any closet or bureau drawer a cedar chest. Parallel to this is the fresh air scent which is used to get mustiness out of closets, clothes, washers and cupboards that have been loaded with moth balls.

Hair sprays are well known, of course, but did you ladies realize there are also sprays for most of your cosmetics except lipstick, and for toothpaste, window and leather cleaners?

Just about now, you'll be able to buy starch that you spray on the ironing—that's the latest gimmick, which followed

Ethel Walsh

shoe shine sprays into the market. Another new one is the scent of a massive flower garden—mixed scents which a cold free nose will quickly pick out for identification. It's to be used to spray artificial flowers so that all winter long they will smell garden fresh.

But neither Miss Walsh nor the makers of the cologne-like sprays plan to quit with household gadgets. The same kind of pressure capsule can be enlarged, mounted in airplanes, and used to scent mudflats at low tide, or sewage and oil-cracking plants when the wind is wrong. Maybe, some day, they will find a scent that will dissipate smog and give suffering humans better air to breathe in our big cities.

Having just come from the Republican National Convention, however, I have a challenge for the spray makers that tops them all. Have they got a scent to replace that of Chicago's stockyards.

Guy Yo Joins Colgate

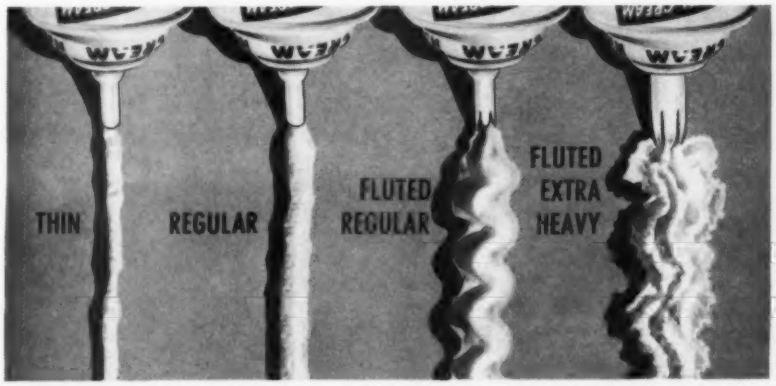
Guy Yo has been appointed to the research and development department of the Colgate-Palmolive Company's Household Products Division.

Mr. Yo joined the Process Section of the Liquid Products Research Area at the Colgate-Palmolive research laboratories in Jersey City. He recently received an M.S. degree in chemistry at Stevens Institute of Technology, where he held a two-year graduate assistantship. In 1953 he graduated from Seton Hall University with a B.S. degree in chemistry. He is a member of the American Chemical Society.

•

Mary Chess Buys Cosmetics Line

Mary Chess, Inc., marketer of aerosol and conventional colognes and perfumes, has purchased the Marie Earle line of cosmetics from General Beauty Products, Inc., Terms of the transaction were not disclosed.



THIN STREAM or HEAVY FLOW

The above photograph shows the same product dispensed through 4 different styles of valves demonstrating the various streams available. The Super Whip variable orifice assures perfect rate of flow control . . . fast or slow . . . thin stream or heavy flow. The best for your products . . . foam, food, or liquid . . . is available. Let our engineers suggest which Super Whip orifice will do the job for your product. Write, wire or phone us today.

Super Whip EZ Lift dust caps eliminate prying, pulling and squeezing. For all aerosol products.

SUPER WHIP VALVE CO.

4101 North Rockwell, Chicago 18, Illinois / JUniper 8-6300

CSMA Aerosol Division Lists Program for Fla. Meeting

Prominent business leaders will be featured speakers at the Aerosol Division's program at the annual meeting of the Chemical Specialties Manufacturers Association, Hollywood Beach, Fla. in December.

The Division's session will be divided into two parts. One will deal with broad general business subjects of interest to aerosol industry management men. The other, a special session on "Quality Control In The Filler's Plant," will provide a review of the latest techniques and developments in the area of aerosol products by some of the industry's quality control experts.

According to E. J. McKernan, Division chairman the following will speak at the Business Session:

Elliot Averett, vice-president, Bank of New York, who will talk on "Financing Growth Industries."

John A. Willis, assistant secretary and assistant treasurer, Union Carbide Corp., who will talk on "Good Business Accounting Practices."

A top management consultant will talk on "New Product Development."

In addition, a yet un-named speaker will talk on "Credit Procedures and Problems of the Aerosol Industry."

The quality control session will deal with such topics as: quality control requirements for valves, containers, propellant and propellant systems, concentrate and concentrate systems, production line operation, finished product certification and laboratory quality control.

In addition, other pertinent topics in this session will include: special quality controls required for such products as pharmaceutical and foods, application of statistical quality control to aerosol filling, and a review of what quality control procedures a marketer expects of his filler.

According to Mr. McKernan, some of the speakers for this part of the program, which will be conducted as a seminar and panel discussion, have been selected and others will be determined in the near future.

George Barr, President of George Barr & Co., chairman-elect of the Aerosol Division, will be co-ordinator and moderator of the Quality Control Session.

•

Dowling to Canco Post

Appointment of Fenton J. Dowling as western area manager of sales, has been announced by the Canco Division, American Can Co., New York. In his new post, Mr. Dowling will be located at the Canco Division's western area headquarters, 111 Sutter St., San Francisco. He will have charge of Canco Division sales activities in Alaska, Oregon, Washington, Idaho, Montana, Wyoming, Colorado, Utah, New Mexico, Arizona, California, and Northern Mexico.

Mr. Dowling is a 30-year veteran with Canco. His service dates from 1929, when he joined the company as a laboratory assistant in Maywood, Ill. Later administrative experience included service in the adjustment department in Chicago, followed by pre-World War II work in the Chicago sales district.

He served in the U.S. Navy from 1943 to 1946, in the Supply Branch, and was discharged with the rank of Lieutenant. After the war, he returned to Canco as assistant district sales manager in Cleveland, becoming district manager a year later. He moved from that post to assistant area manager of sales in the Midwest and, in 1957, took over the sales management of the entire Central Division.

•

Helene Curtis Names Rosen

Harold J. Rosen, former executive assistant to the board chairman, has been named vice president of Helene Curtis Industries, Inc., Chicago cosmetics marketer. He will be responsible for corporate acquisition and development activities. Helene Curtis is a major marketer of hair spray aerosols.

Richford's *Golden Touch* adds sales magic to your products

TWO TONE MASKED FINISH

Applied to our beautiful Futura Caps to give your product added sales appeal.

Available immediately from our unique "in stock" selections in standard styles from 10MM to 24MM. Also available with our own Exquisite, Ambassador, and Fantasy Bottles in sizes from 1 dram to 4 oz., in Standard open neck or Spillproof style.

GOLD PEAK DECOR

Applied to our black or white plastic closures to give your product more eye appeal!

Available immediately in 13MM to 24MM on any shape cap — including the ever-popular Futura design — from Richford's unique "in stock selections." In Standard and Spillproof styles, "Gold Peak" closures are the perfect companion for our complete line of Fantasy, Ambassador, Square, Exquisite and Round Bottles.

We Invite Your Inquiries for Samples and Prices

Your Product Deserves

Sales offices in all major cities throughout the world

RICHFORD CORPORATION

Executive Offices and Plant
3618 Oceanside Rd., Oceanside, N. Y.

Showrooms
Empire State Bldg., 350 5th Ave., N. Y., N. Y.

ORCO

THE GOOD SOURCE OF SUPPLY FOR THE PACKAGING INDUSTRY

OHIO RUBBER

- *High quality, high accuracy in large runs*
- *Tolerances ±0.003 in.—diameters to 1 1/2 in. —thicknesses to 1 in.*
- *200,000 identical parts per day*

IDEAL FOR AEROSOL VALVES, SEALS, GASKETS

OHIO RUBBER is geared to supply the aerosol packaging industry with cost-cutting, high quality small rubber parts—in high volume. The precision and identical uniformity of parts produced by ORCO's new high-speed continuous molding process plus production economies, particularly in runs of 500,000 or more, adapt this process ideally for aerosol packaging.

COMPLETE INFORMATION is available in ORCO BULLETIN CM-100. Write today. PK-160

ORCO EAGLE EP PICHER

THE OHIO RUBBER COMPANY

General Office • Willoughby, Ohio • WHitehall 2-0500

A DIVISION OF THE EAGLE PICHER COMPANY

equipment processes bulletins

Frank Introduces New Caps

A plastic overcap said to complement high fashion design in glass aerosol containers has been developed

by The Walter Frank Organization, Hillside, Ill., package engineers and designers. Molded in high impact polystyrene, it features a reverse flare with a slightly concave top which adds to its appearance while leaving a good surface for price marking. The overall effect is of greater heighth achieved through simplicity of design.

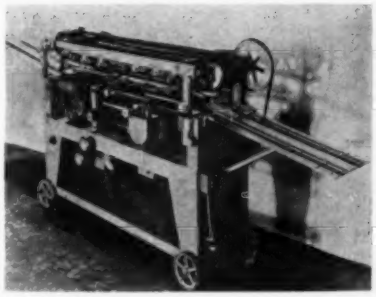
Available in a full range of colors, the new cap is stocked by The Walter Frank Organization in many basic colors and in clear polystyrene. It is available in two internal diameter sizes to fit steel or aluminum mounting cups. The new caps, designated "proprietary Item No. 60," have been put up in compact but complete sample kits for the convenience of advertising managers and packaging directors interested in trying the product with their company's glass aerosols. This kit is obtainable from The Walter Frank Organization, 4100 Warren Ave., Hillside, Ill.

•

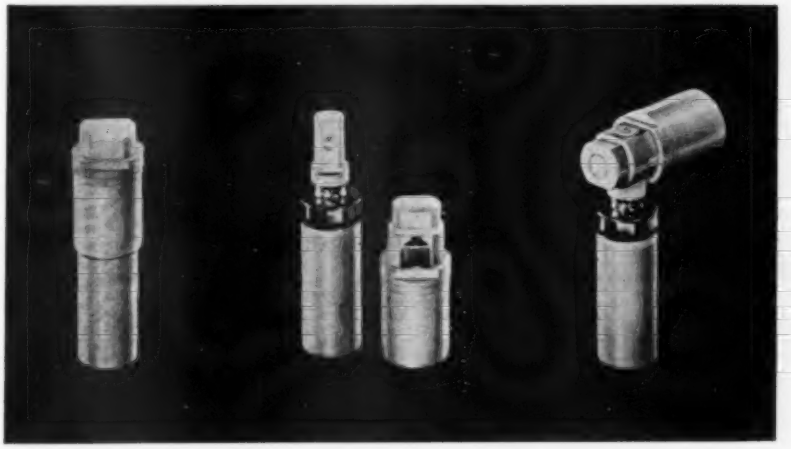
New Labeler Is Offered

A new unit designed for wrap-around or spot labeling of aerosol cans and glass containers has been introduced by the Crompton & Knowles Packaging Corp., Holyoke, Mass. Capable of speeds up to 1,000 units per minute, it is equipped with a stainless steel paste belt which is said to prevent drag on labels during interruptions to supply of containers. It has a removable paste pot on the operator's side of the machine for better access in filling and cleaning.

One feature is a label box adjustable at each end to allow adjustment even when the labels are trimmed crooked. An automatic device is included to maintain precise operating heights on labels with no adjustment by the operator.



Emson Develops New Oral Metering Attachment



A new metered attachment for accurate spray control of oral dosages, has been announced by Emson Research, Inc., Bridgeport, Conn. The oral attachment is made of Super Dylan plastic and is designed for simple quick operation. It has reportedly proved effective for combating sudden asthmatic attacks, particularly when an accurate dosage of medication is required in seconds. Slight pressure on the activating button releases a metered amount of medication.

The attachment is constructed to provide maximum sanitary protection. It is compact, easy to carry, leakproof, dustproof and virtually foolproof in operation. It is produced at nominal cost, in comparison with other more complicated oral attachments. The unit fits on standard 20mm valves, which are generally used with glass bottles, and for use with special stainless steel containers patented and produced by Emson.

To use the attachment, the top is removed and placed horizontally on the valve button. Pressure on the button activates the valve and at the same time, directs the medication

through the attachment into the mouth and lungs.

Emson is manufacturing the complete package, which consists of metered valve, stainless steel container and the oral attachment. Emson metered valves range in dosage from as low as 35 mg. to any larger size required. The package, complete with attachment, may also be used for virtually any oral medicinal throat spray, mouth wash and breath freshener.

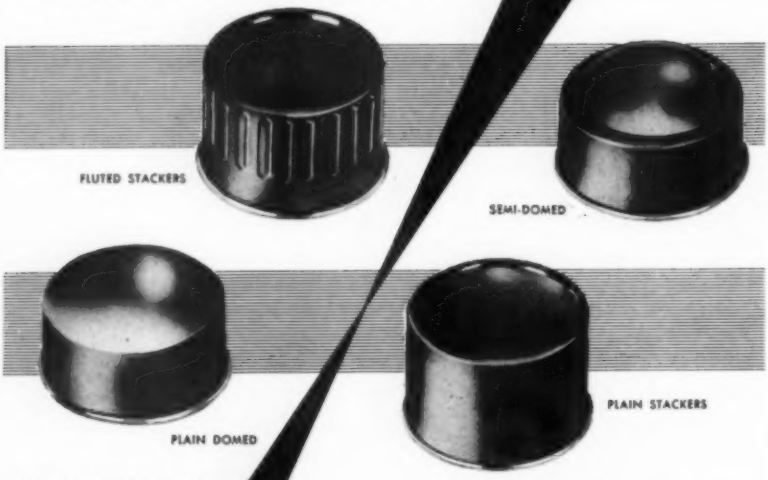
Samples may be obtained from the company at 118 Burr Court, Bridgeport, Conn.

•

New Line of Scales

Heavy-duty portable platform scales, for use in many industrial and commercial weighing operations, have recently been added to the product line of the Exact Weight Scale Co., Columbus, O. Called the "Series 9600" general purpose scales, they are available in two capacities—500 pounds with 8-oz. graduations, and 1,000 pounds with 1-lb. graduations.

NOW...
SUPERIOR SERVICE
for the
AEROSOL INDUSTRY



We also manufacture tin plate Screw Caps from 18mm to 120mm.

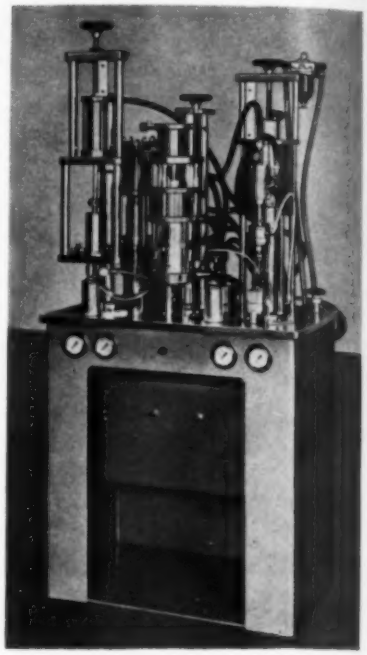
PENN, known for finest service to the bottling industry for over 25 years, is now making tops for aerosol containers.

All of Penn's customers receive superior service and careful attention on every order. You are assured of top quality workmanship, the right price and immediate delivery.

Call or write for information.

Penn CORK & CLOSURES, INC.
1155 MANHATTAN AVE., BROOKLYN 22, N. Y.
EVergreen 9-4416

Aeratom Introduces New Filler



An aerosol filling line mounted on a single table has been introduced by Aeratom Ltd., Rapperswill, Switzerland. Included in the unit is air compressor, gasser and crimper. The filler works by what Aeratom calls the "Third System," in which the propellant is introduced into the open container rather than through the aerosol valve.

Called the "Aeratom 810," the machine fills the product, removes air, fills the propellant and crimps the valve. Only one operator is required to control the entire operation.

Aeratom also supplies large-scale production equipment for export throughout the world.

•

Co-Ral Approved for New Use

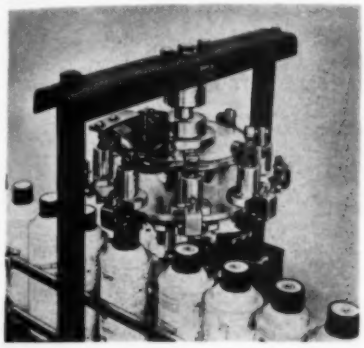
Co-Ral, a livestock insecticide, has been approved by the United States and Canada for control of keds on sheep and goats. It was previously approved for control of fleeceworms, hornflies, lice, ticks and screw-worms on these animals. A 25% wettable powder, it may be applied by virtually any type spray equipment for efficient ked control.

Co-Ral has been marketed for the past two years for effective control of a variety of insects which attack cattle (notably grubs), horses and swine,

in addition to sheep and goats. It is manufactured by Chemagro Corp., Kansas City, Mo.

•

Gottscho Offers New Coder



A redesign of its Model TMT "Markocoder" conveyor-line machine for imprinting codes, prices, etc., on the tops of aerosol cans, bottles, and other basically cylindrical products, has been announced by Adolph Gottscho, Inc., Hillside, N. J.

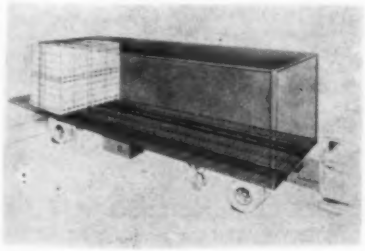
The new design permits straight-through travel of containers to assure smooth and uninterrupted product flow. Also, there is no need for cutting conveyors nor installing dead plates. Maximum speed now obtainable, according to the manufacturer, is 1,000 per minute.

The new Model TMT "Markocoder" is self-powered, driven by the product stream itself. Eight separate printing heads register imprints in the same spot on each succeeding product. A unique cam-activated mechanism automatically compensates for products of widely varying heights. It accommodates rubber type and instant-drying fluid inks suitable for any surface.

•

New Type of Conveyor

The "Air Chain," a new method of handling palletized loads of materials, is a new development of Alvey Conveyor Manufacturing Co., St. Louis. Said to offer a way to reduce intra-plant handling costs between production line and shipping docks or warehouse, the new development is a large conveyor which can be installed in the bed of trailer, or on a floor, to eliminate "stand around" time of loading and unloading crews.



The "Air Chain" consists of two rows of roller conveyors with a drag chain centered between the rows to provide movement to the pallet loads. The drag chain is mounted on a track bolted to the bed of the trailer and operates by inflating a hose which raises the chain to the level of the rollers. It is used in trailers to load and unload pallet loads of cans in two rows of pallets, two tiers high. Prime mover for the air chains is a 2½-h.p. gasoline engine with a battery-operated self-starter.

•

Fairfield to Sell Dri-Die

Dri-Die, a finely powdered residual insecticide developed by the Davison Chemical Division of W. R. Grace Co., Baltimore, is now available through representatives and sales offices of Fairfield Chemicals Division of Food Machinery and Chemical Corp., 441 Lexington Ave., New York 17. Offered either alone or in combination with Pyrenone, Fairfield's insecticide base, the insecticide kills crawling insects by dehydration.

Said to be equally effective against resistant and non-resistant insects, Dri-Die is harmless to humans and warm-blooded animals when used as directed. An amorphous silica aerogel, it cannot deteriorate. It is a white, odorless non-staining powder which may be formulated for use in aerosol containers.

•

Patent Suntan Agent Process

A fermentation process for making dihydroxy acetone, an artificial suntanning agent now being used in a wide range of new products, has been patented in the U. S. by Wallerstein Co. Division of Baxter Laboratories, Inc., Staten Island, N. Y. The material is reported to be under study as an aerosol suntan agent.

SALESMAKER!
METAZENE®
(specially refined esters of methacrylic acid; U.S. Patent 2,544,093)
THE SPACE DEODORANT THAT KILLS ODORS CHEMICALLY!

Salesmaker is right! There's a large segment of the buying public that objects to strongly perfumed deodorizers. Turn these objections into sales for you by using Metazene in your aerosol formulations.

Metazene acts differently from other space deodorants in that it actually *destroys odors chemically*. Not a masking agent, not a desensitizer, Metazene stands alone in its complete odor killing properties.

Available to the aerosol merchandiser as an 80% concentrate. Write for technical data and prices.

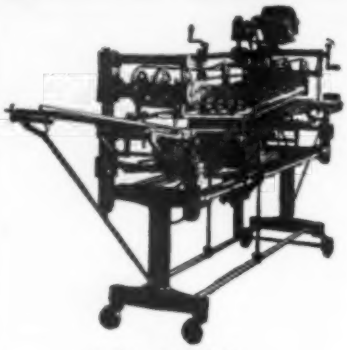
MOTOMCO, INC.
91 TERMINAL AVENUE
CLARK, N. J.

Producers of famous **PIVAL®** *and* **PIVALYN®** *Rodenticides*

Aerosol Can Labeler
by New-Way

All types of AEROSOL CANS . . . filled or empty . . . with or without caps . . . right or left hand lap.

Other models available for handling most types of round containers. Ask for Bulletin AA-1580.



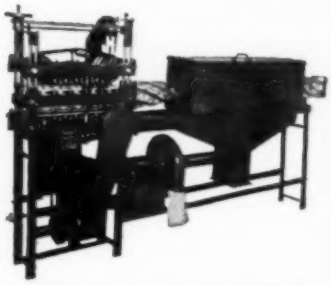
MODEL V LABELER

GLUER - SEALER

Incorporating such features as Flap Pre-heaters — controlled jet glue applicators—visible glue supply and many others. Write for Bulletin AA-1498.

CRCO JAR CLEANING LINE

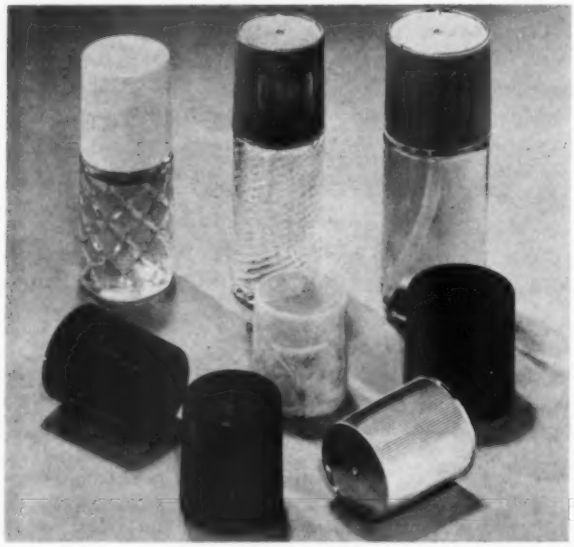
Will blow loose dirt out of *Aerosol* cans, many types small neck bottles, and wide-mouth glass or tin containers. Other models available for water or steam to rinse or flush containers. Write for Bulletin AA-1493.



INVESTIGATE OTHER NEW-WAY PACKAGING AND LIQUID FILLING MACHINERY

The Best IN LABELING FILLING AND PACKAGING *Equipment*

Chisholm-Ryder
COMPANY OF PENNSYLVANIA
HANOVER, PENNSYLVANIA



STOCK and CUSTOM DESIGNED CAPS

We feature a line of stock caps. Custom designs may be achieved at a nominal tooling cost, and they are available gold coated or in colors. We design and produce aerosol caps for special needs. Write today for details, or telephone CEnter 3-7311.

PharmaPlastics
INCORPORATED

205 S. Smallwood Street
Baltimore 23, Maryland

FRIES & FRIES

FRIES & FRIES . . . SERVING THROUGH RESEARCH

"Aerosol" Tularemia Vaccine is Developed By Army

OF AT LEAST academic interest to aerosol pharmaceutical researchers was a paper delivered to the annual meeting of the Society of American Bacteriologists in May by H. T. Eigelsbach, J. J. Tulis and W. R. Griffith of the Fort Detrick Army Chemical Center and Lt. Col. E. L. Overholt of the Army Medical Unit at Fort Detrick. The paper described the superiority of an improved live aerogenic vaccine for tularemia, administered as an aerosol, over a similar vaccine administered subdermally.

It was pointed out by Dr. Eigelsbach, who delivered the paper, that the inhalation method of introducing the vaccine provides greater immunity to tularemia than via the dermal route. The test animals were given one million organisms by the respiratory route, utilizing a Henderson-type dynamic cloud chamber for exposure and the Collison nebulizer for the production of a small particle aerosol.

As evidence of superiority of the method, Dr. Eigelsbach reported: "With few exceptions, animals that received live tularemia vaccine by the intracutaneous route became febrile (104 to 105° F.) for a period of 12 to 48 hours 2 to 4 days after administration of the vaccine. In contrast, none of the monkeys vaccinated by the respiratory route became febrile."

It was reported that the preparations used for aerogenic vaccination consisted of an attenuated vaccine strain grown on liquid or solid medium and suspensed in a menstruum consisting of 50% casein partial hydrolyzate growth medium. Although such a live vaccine obviously could not be delivered from a pressurized package, it is conceivable that it could be "bled off" by one of the existing aerosol-cartridge devices (such as that developed by Thomas J. Mahon, Inc., Englewood Cliffs, N. J.).

The bulk of the paper consisted of statistical animal test data to show the superiority of the aerosol-applied vaccine. In conclusion, Dr. Eigelsbach explained that "not only did aerogenic vaccination provide these animals with immunity against respiratory infection, but gave greater protection against dermal infection, the usual route by which the hunter is infected when handling animals or when man is bitten by an infected tick or deer fly." He predicted that administration of the Fort Detrick vaccine by the dermal or respiratory route to laboratory workers, hunters and those living in tick infested areas will sharply decrease the incidence and severity of tularemia, a disease which can be fatal to man.

The paper received coverage in the national press.

•

Aerosol Powers Air Sampler

A can of propellant 12 provides a light-weight power source for a new simplified air sampling device perfected by the Industrial Hygiene Laboratory of E. I. du Pont de Nemours & Co., Wilmington. Designed to help industrial hygienists, air pollution and safety experts determine air cleanliness, it is small enough to be held in one hand.

Weighing less than four pounds, it uses the can of propellant in place of heavy, bulky hand or motor driven pumps. Evaporation of the propellant, fed at constant rate not only delivers the propellant gas to the aspirator nozzle at constant pressure, but also removes heat from the coil which provides cooling to reduce evaporation losses from reagent solutions. The visible "Flo-Set Rotameter," calibrated for the range of 0 to 5 LPM and 0 to 10 CPM, shows no deviation in the selected air flow rate from start to finish. Typical chemical pollutants which can be determined with the instrument include acid fumes, nitrogen oxides, sulfur dioxides, toluene, diisocyanate, phosgene, and hydrogen sulfide.

NEW COMBINATION
CAPPER
FOR AEROSOLS
BUILDER'S NEW "Combination Drill Press Capper" for Aerosol Bottles and Cans has a Production Rate of approximately 2 per minute with Aerosol Bottles . . . 8 per minute with Aerosol Cans.
BUILDER'S CAPPERS can be used as a DRILL PRESS where Aerosol Production does not employ it Full time. Foot Switch included for use when Capping Bottles.
Bottle Capper (motor used)
Can Capper (motor not used)
DIMENSIONS:
Base Size: 14x24", Height: 30", 110 Volt AC, ¼ HP Motor
Aerosol Bottle Capper.....$208.00
Can Capping Attachment.....$160.00
BUILDERS PRODUCTS
Division of BUILDERS SHEET METAL WORKS, Inc.

COUNT ON KLM FOR YOUR BEST INCENTIVE PROGRAM

Looking for the right incentive program? Look no further! KLM offers a complete package with practical suggestions and **all the material** you will need to run a successful program. In addition, KLM has the widest choice of incentive tours: to Europe, the Caribbean, Far East, around the world. Each tour is flexible — each can be tailored to fit your company budget. For complete information, mail the coupon.

KLM Royal Dutch Airlines
Incentive Travel Department AA-100
609 Fifth Avenue
New York 17, New York

Please have a KLM specialist call on me to outline my incentive program and tour possibilities.

Name_____

Company_____

Address_____

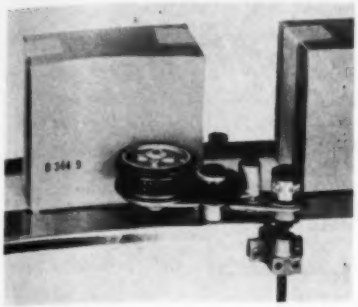
City_____ Zone_____

State_____

THE WORLD OVER KLM ROYAL DUTCH AIRLINES

THE WORLD'S FIRST AIRLINE

New Series of Coders



A new series of coders for printing and coding using "Porelon" has been announced by Bell-Mark Corp., Newark, N. J. "Porelon," a development of S. C. Johnson & Sons, is a plastic material which is said to permit as many as 100,000 impressions or more before reinking. The printing ink is contained in the "Porelon" roller itself, thereby eliminating the need for the usual transfer rollers.

Included in the series is the company's new "Model 10-P" coder, which is described as the first coder of its type to be priced under $100. This unit has a 10-inch circumference with a half-inch face width.

•

Plasti-Kote Paint Catalog

A new multi-color eight-page aerosol spray paint catalog has just been published by Plasti-Kote, Inc., Cleveland. According to Elias Shapiro, executive vice president, the new catalog is one of the most complete ever to be offered in the aerosol paint industry.

Each page features full color illustrations of the company's push button spray paint products. Products for use in the home, for automobile and boat, on the farm and in industry are presented in complete detail. This includes information on operating features, color selections and assortment numbers. Special pages are devoted to fast drying lacquers, plastic sprays, hammer finish sprays and specialized sprays. Special spray products include Rust Solvent, Ignition Spray, Degreaser & Motor Cleaner, Insect Spray, Floral Sprays and many others. The company's point-of-sale floor and counter displays for aerosol paints are also illustrated in the catalog. Plasti-Kote recently introduced a new tilted shelf floor display to help retailers "sell-on-sight" in self-selection areas.

Copies of the new catalog may be obtained by writing the company at Dept. MBS, Plasti-Kote, Inc., 9801 Harvard Ave., Cleveland.

•

Fleuroma Offers New Service

W. Lengsfelder and Mr. E. Poons, sole owners of Fleuroma, Inc., New York, manufacturers of perfume oils and aromatic specialties, have announced an integrated international operation to American customers desiring special services abroad. Under the direction of Eric Zielenziger, in charge of foreign operations, the facilities of Poons and Lengsfelder, Ltd., 12 Broadway, London, S.W. 1, England (managed by Mr. John King); Fleuroma S.A.R.L., 18 Rue Marbeuf, Paris 8, France (managed by Lucien Romagnan), and Essencias Fleuroma Limitada, 5107 Av. Washington Luiz, Sao Paulo, Brazil (managed by Mr. Leo Schulmann), are available to those requiring such services. All opened within the last 16 months, the three overseas offices have been integrated into the total Fleuroma research, production, and quality control.

•

New Type of Label

The Kalamazoo Label Co., Kalamazoo, Mich., has announced a new gummed label printed on a paper stock, called "Prone," which handles and stores like plain paper. According to the company, it lies flat without pre-sticking or curling through extreme variations of temperature and humidity. One side of the paper needs only slight moistening to cause it to form a strong permanent adhesive bond to a product surface. The paper used in the labels was developed by the Gummed Paper Division of Minnesota Mining & Manufacturing Co.

A four-page bulletin describing the new label stock is available from the company at 321 W. Ransom Street, Kalamazoo.

STANDARDS MAINTAINED · FORMULAS PROTECTED · QUALITY AEROSOLS

pace for

Custom Packaging

Aerosol and Bulk

Product Development

PRODUCTION RUNS
SAMPLE RUNS

it will pay you to use us as your complete packaging source

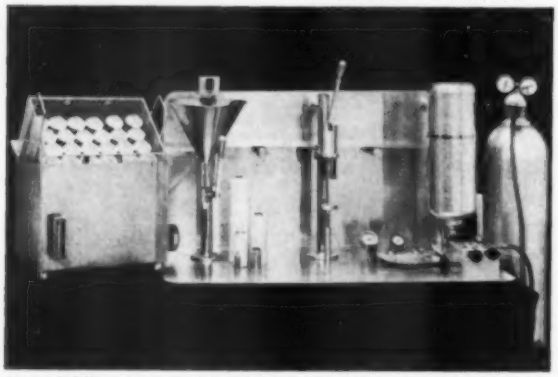
pace incorporated

P. O. BOX 206
WILMINGTON 99, DEL.
EAST 8-4151

For information, write Dept. AA-100

aerosol loading for under $400

model 1000-m, including: gasser, filler, crimper, pressure tester, support rack and shelf $397.50
FOB West Palm Beach, Fla.



Aerosol Filling Unit Model 1000-M with leak test tank & accessories

IDEAL FOR LABORATORY or SHORT RUN PRODUCTION

Accessories and Cost:			
Bottle Crimper	$189.50	Can Crimper (manual)	$159.50
Nitrogen Regulator	47.00	Agitator	34.50
Leak Test Tank (stainless steel)	179.50	Nitrogen Connecting Hose	4.50
Scale	22.50	Valve Adapters (specify)	4.00
		Propellant Rack (holds five 25 lb. cyls.)	225.00

Now You Can Fill Using:

FLUOROCARBON, NITROGEN AND CO_2 PROPELLANTS

. . . The Pressure Pak Model 1000-M with accessories is fully capable of performing all aerosol loading tasks required in laboratory development and short run production. Constructed primarily of stainless steel and aluminum, the Pressure Pak 1000-M requires only eight square feet of space for set up.

TECHNICAL AID AVAILABLE: The engineering department of Pressure Pak will furnish technical assistance on general formulation and aid in locating sources of supply for components upon request There is no charge for this service.

DIRECT ORDERS AND INQUIRIES TO: Dept. A-1

Pressure Pak, inc.
420 Monceaux Road **West Palm Beach, Fla.**

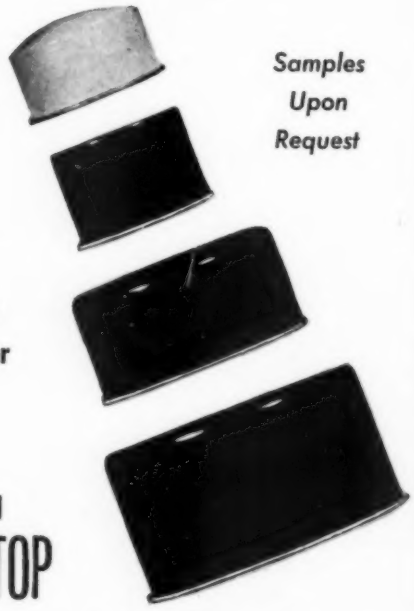
Leading in Europe

PARFUMS pour **AEROSOLS** de toute nature et destination

DE TRÉVISE

PARIS 42, RUE DE LA REINE HENRIETTE COLOMBES (Seine)
LONDON 158, COPENHAGEN STREET LONDON, N 1

Cover Caps



Dome

Plain & Fluted Stacker

New Overall FLATTOP

Samples Upon Request

Eastern Cap & Closure Co.
725 N. Haven St., Baltimore, Md.

Russell Stoddard Is Dead, Guided Pyrethrum Development

Russell B. Stoddard, who is credited with having been probably the key man behind the successful development of pyrethrum for use in aerosol insecticides, died last month after a long period of ill health.

R. B. Stoddard

Mr. Stoddard began his chemical career in 1912. A graduate of Clark University, he taught organic chemistry at Lowell Textile Institute until 1917, when he became a research chemist on the staff of National Aniline Corp. Three years later he joined Ungerer & Co., essential oil producer, and later moved over to van Ameringen-Haebler (now a division of International Flavors & Fragrances, Inc.).

In 1934 he joined R. J. Prentiss & Co. (now Prentiss Drug & Chemical Co.) and was in charge of the firm's insecticide business. Among his achievements at Prentiss was the opening up of a new source of rotenone root (which had previously come from Java and Malaya) in Peru, which today is the major world source.

In 1939 Mr. Stoddard joined Dodge & Olcott, Inc., where he became associated with a special research group working to develop a highly purified pyrethrum extract for use by the Armed Forces. The development paved the way to a whole series of aerosol formulations employing this purified pyrethrum extract and later provided the impetus to another project, development of piperonyl butoxide as a pyrethrum synergist.

When U. S. Industrial Chemicals Co. purchased the insecticide section of D&O in 1945, Mr. Stoddard went to that company as coordinator of insecticide operations. In 1951 USI was absorbed by National Distillers, and three years later the insecticide activities of the company were acquired by Food Machinery & Chemical Corp. When the Fairfield Chemical Division was formed that same year, Mr Stoddard was named manager of the division. In 1956 he became a consultant to the administrative offices of Food Machinery & Chemical.

Mr. Stoddard served as a director of the National Agricultural Chemicals Association for a number of years and was active on several committees of the Insecticide Division of the Chemical Specialties Manufacturers Association.

GE Ups Silicone Facilities

General Electric Co., Waterford, N. Y., recently started construction on a new $3 million plant for the manufacture of basic silicone intermediate chemicals. The new facility will add more than 15,000 square feet of manufacturing space to the Waterford plant and will replace smaller existing facilities.

•

O-I Appoints Francis

Thomas R. Francis, manager of the Toledo sales branch of the Glass Container Division of Owens-Illinois, has been assigned to the division's New York branch as manager of glass container sales to the drug and chemical industries. Mr. Francis, who served in Toledo two years, joined Owens-Illinois 10 years ago, serving most of that period at the company's Chicago sales office.

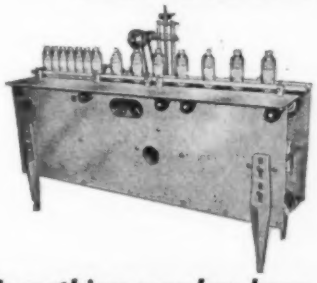
•

CSMA Contest Still Open

Entries for the 1960 Aerosol Package Contest, sponsored by the Aerosol Division of the CSMA, close Oct. 15. Blanks may be obtained from the CSMA office.

KIWI®

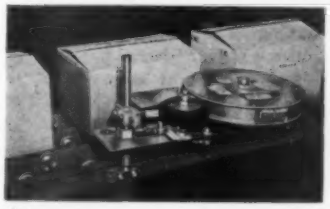
AEROSOL CODE DATING EQUIPMENT
that has *earned* industry acceptance



POWER DRIVEN CODER

With work table area.
For automatic code dating of concave bottoms of aerosol cans.
Will mark top, bottom, or both at the same time.

Something new has been added . . .



CASE CODE DATER
with Kiwi built-in rubber band type.

- No loose type to become lost
- Ink just once per shift
- Never needs cleaning
- Inker never dries out
- Prints in the same place on every case

Also . . .
case printers for consecutive numbering
or printing information on cases

KIWI® CODERS CORPORATION
Dept. AA, 4027 N. KEDZIE AVE. CHICAGO 18, ILL.

KING SIZE AEROSOL DISPOSABLE CONTAINERS

Left to right—TMC 2, 3, 10 and 5 lb. King Size Disposable Aerosol Containers

BIG Packages that are Opening Up BIG New Markets

▶ Now YOU can make Aerosol sales-building advantages work for you in a BIG way.

You can now sell your product in pounds, quarts and gallons by using TMC King Size Disposable Containers.

They move more of your products...at more dollars per unit of sale...to more users...in consumer, commercial, industrial, institutional and many other volume fields.

In addition,—they give design engineers a new basis for new products such as oxygen resuscitators, fire extinguishers, torches, lanterns, camp stoves and other items selling to volume markets.

TMC Disposable Containers are made in a wide range of sizes and shapes for working pressures including 240 psi and 1800 psi in conformance with ICC specifications.

A letter or phone call NX 3—7900 will bring you information based on broad field experience in serving many industries.

TUBE MANIFOLD
CORPORATION

419 BRYANT STREET N. TONAWANDA, N. Y.

IFF Appoints H. G. Reid

Herbert G. Reid has been appointed controller of International Flavors & Fragrances Inc., New York. Prior to his appointment he had been associated with the accounting firm of Price Waterhouse & Co. for 10 years. He received his B.A. degree from Yale University, and a Master of Business Administration degree from New York University. He is a member of the American Institute of Certified Public Accountants and the New York State Society of Certified Public Accountants.

•

Pyrethrum Dispute Settled

The long-standing dispute between the Pyrethrum Board of Kenya and the East African Extract Corp., Ltd., the two major pyrethrum producing combines in East Africa, has been "amicably settled," according to statements issued in August by both groups. They had been fighting in the courts for some time.

•

ASTM Lists Staff Changes

The American Society for Testing Materials, Philadelphia, last month announced several changes in its headquarters staff. Robert J. Painter, executive secretary since 1952, has stepped down because of illness to become consultant to the executive secretary and treasurer. Replacing him is Raymond E. Hess, former associate executive secretary, who will carry the title of acting executive secretary.

Consultant's Corner

(*Continued from Page* 98)

shutters.

I prefer a pack or plate type camera as one or two exposures may be adequate and no other type of equipment will allow you to process each shot individually and still have a negative. I use an enlarger quite frequently—occasionally to show blown up detail from the same negative used for another print.

If I could forgive the lack of a

CUSTOM MADE CONTAINER
FOR YOUR AEROSOL PRODUC
Patented re-fillable aerosol containers designed to fit your product's personality. Tooled by skilled craftsmen into impulse initiating packages.
Unlimited body and c styles in a variety of unusu metal or enamelled finisl are exclusively yours B.M.G. Write or call now samples and service.
BMG
A Mark of Quality Since 1909
The BRIDGEPOR
METAL GOODS MFG. C(
BRIDGEPORT 5, CONNECTIC

negative in the usual sense, my choice would be a Polaroid Land camera and I suspect it would be my recommendation for anyone setting out to acquire original equipment. Where transparent negatives are desired they can be made and the effectiveness of the usual immediate picture is certainly great for the bulk of photos. In addition the Polaroid 3000 ASA film offers many advantages over most of the other films available, since snapshots in a normal living room at night without additional illumination are possible. If the Polaroid camera is used, the fixer should be applied properly to each picture since permanence might become a vital factor.

Regardless of what equipment is used, processing facilities should be at hand and ready for immediate use, since the ultimate flexibility and effectiveness of photographic help can only be realized if it is under "home" control.★

Particle Size

(*From Page* 85)

correction factor would be 0.40. Therefore, 30.8 microns x 0.40 gives a median particle diameter of 12.3 microns.

The particle size of a liquefied-gas aerosol should be reported not only by mass median diameter but also by the accumulative percentage for each 5 microns in diameter up to 50 microns. This percentage can be obtained from Table 1, after the correction factor is determined. The 5-micron-diameter points are calculated in terms of microns from the scale divisions, and then the corresponding accumulative percentage is interpolated from the value in the last column.★

Air Fresheners

(*From Page* 71)

of a similar mechanism. In other cases it destroys odors by either direct oxidation, Schiff Reactions or simple addition.

Formaldehyde has been used in both alcoholic and petroleum distillate types of aerosol deodorants. The concentration should be kept below 0.05%; otherwise its sharp odor may penetrate through the masking perfumes used with it. Formaldehyde is well known for the corrosion problems it creates, especially when it remains in contact with plain tinplate. Benzoic acid inhibitors, used with phenolic lined cans, will generally solve this problem.

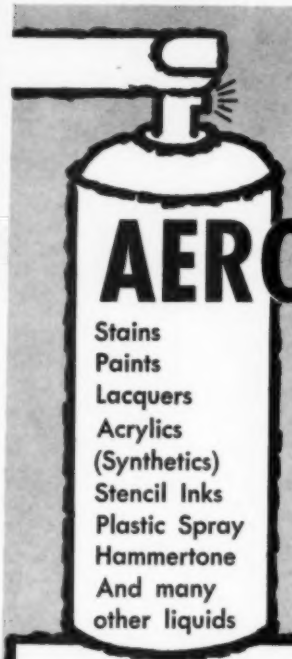
The very reactivity of formaldehyde has generally been the cause of its limited use in aerosol deodorants. It readily combines with many perfume ingredients, and may oxidize to formic acid spontaneously within the can. As a rule, formaldehyde should

FLORASYNTH LABORATORIES
INCORPORATED
NEW YORK
PAT OFF

if it's a fragrance ... we have it!

Florasynth
LABORATORIES, INC.

EXECUTIVE OFFICES:
900 VAN NEST AVE. • (BOX 12), • NEW YORK 62, N. Y.
CHICAGO 6 • LOS ANGELES 21
ATLANTA • BOSTON • CINCINNATI • DALLAS • DETROIT
MINNEAPOLIS • NEW ORLEANS • ST. LOUIS • SAN FRANCISCO
Florasynth Labs. (Canada Ltd.) • Montreal • Toronto • Vancouver • Winnipeg
Agts. • Dist. in Mexico: Drogueria & Farmacia Mex. S. A., Mexico 1, D. F.
Sales Offices in Principal Foreign Countries



Formulators
and Fillers

AEROSOLS

Stains
Paints
Lacquers
Acrylics
(Synthetics)
Stencil Inks
Plastic Spray
Hammertone
And many
other liquids

We excel in research, production and special color matching. We are prepared to handle all runs no matter how large or how small.

MOHAWK FURNITURE FINISHING PRODUCTS, INC.

175 W. Main St. Amsterdam, N. Y.
88-05 101st Ave. Ozone Park, N.Y.C., N. Y.
3809 Burbank Blvd. Burbank, Calif.

AUTOMATIC AND LABORATORY

AEROSOL PRODUCTION BOOSTERS

AUTOMATIC CAN CLEANER
AUTOMATIC PRODUCT FILL
COLD PURGING UNIT
AUTOMATIC BALL FEED
AUTOMATIC PROPELLANT INJECTOR
AUTOMATIC CAN CRIMPER
UNSCRAMBLING TABLES

We manufacture automatic and semi-automatic units. Standard automatic production lines available; specials designed to suit your needs.

AMCO PRESSURE BURETTE

Hand operated injector valve with easily changed adapters for use with most popular make aerosol valves. 1000 cc capacity . . . calibrated in 5 cc graduations. Non-corrosive materials used throughout.

AMCO HAND CRIMPER

For standard 1" valve cups; hand operated. Short stroke and multiplied leverage lessen operator fatigue. Single stroke action locates can, seats valve, and crimps. Crimper jaws aligned for all can heights.

Immediate delivery from stock. Write for literature

AMCO **AEROSOL MACHINERY CO.**
80-A MAGNOLIA AVE., WESTBURY, L. I., N. Y.

be used in deodorant aerosols only after a most careful consideration of the problems involved.

Perhaps the most famous of the aldehyde deodorants is 3,5,5-trimethylhexanol. Cooperative tests conducted with the Armed Forces during the Korean conflict proved the ability of this material to reduce the disturbing odors of blood in field hospitals and in aircraft carrying injured personnel.[123] It was later shown to be effective against a wide spectrum of domestic mal-odors. Dimerization, oxidation and other problems related to the chemical activity of 3,5,5-trimethylhexanal had to be solved before widespread non-military use could begin. During 1959 several concerns made the new material available[106], and proposed that it be used in aerosol air fresheners at levels between 0.02% and 0.03%. It was also introduced and used successfully in non-aerosol, industrial applications; such as the control of odor problems in the petroleum industry. It has begun to replace enanthaldehyde and similar deodorant chemicals in this area[107].

The commercial product is a colorless or amber liquid, depending upon the supplier, which contains about 97.5% aldehyde. A substituted phenol inhibitor is used to prevent oxidation. The odor is sharp, penetrating and pungent, with no special association. The deodorant has demonstrated good compatibility with a variety of perfumes, solvents, and companion deodorizing materials, but there have been a few instances where undesirable side reactions have taken place. One of the best masking perfumes for 3,5,5-trimethylhexanal is pine, with citrus types coming next in efficiency. Even so, as little as 0.02% of deodorant shows brilliantly through the perfume mask at all levels used in air fresheners. It imparts a fresh evergreen note to the overall pattern, which is very strident and refreshing.

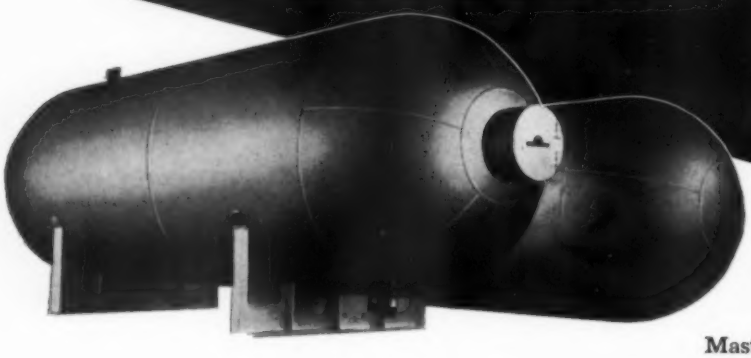
Because of its reactivity, 3,5,5-trimethylhexanal should be kept in sealed tins or bottles at all times. It is good practice to divide the contents of freshly opened tins into bottles which are just large enough to hold the amount necessary to make one production batch each. This procedure minimizes the formation of 3,5,5-trimethylhexanoic acid, which has a harsh, biting odor with a fatty acid by-note. For good control it is desirable to run a hydroxylamine aldehyde analysis on incoming materials, rejecting that in which the aldehyde runs less than about 94%.

A second deodorant of interest is β-ethoxypropionaldehyde, made by the Shell Development Co.[108] on a pilot plant scale. The product is a colorless liquid, very pungent and somewhat irritating to the nasal passages. It consists of about 98% aldehyde, the balance being the corresponding carboxylic acid and 0.1% hydroquinone inhibitor. It is quite reactive, polymerizing readily[109], and is suggested for use at concentrations of not more than 0.02%. The same testing and handling precautions should be applied as with 3,5,5-trimethylhexanal. Limited tests have demonstrated the ability of β-ethoxypropionaldehyde to subdue a variety of domestic odors. It has been found to be compatible with a number of perfumes and solvents, and imparts a distinct lemon or melissa-like note to the final fragrance of air freshener formulations.

Another new aldehyde deodorant is glutaraldehyde, commercially available as a 25% aqueous solution from the Shell Chemical Co.[110]. The pure material polymerizes rapidly unless separated from the distillation forerun and after-run, resembling lauryl methacrylate types in this respect. Because of its polymerative instability at temperatures above 40°F., gluteraldehyde is more conveniently handled as the 25% aqueous solution, where it exists largely in the hydrated form[111].

The deodorant is a colorless liquid with a penetrating, fruity odor somewhat resembling acetaldehyde, as might be expected. It is suggested for use at concentrations of about 0.04%

PROPELLANT PRESSURE VESSELS of all sizes



Engineered to fit your requirements

FROM 150 GALLONS TO 70,000 GALLONS

Master Tank & Welding, one of the oldest fabricators of ASME pressure vessels for the petroleum and the butane-propane industries, is now producing propellant pressure vessels for the aerosol industry. Both Master plants at Dallas, Texas, and Quincy, Illinois, are equipped with the most modern steel fabricating equipment to assure you of the utmost in safety and quality. This modern equipment also means competitive prices. Send us your specifications for quotation and delivery. No obligation, of course.

MASTER TANK & WELDING

P.O. Box 5146 — Dallas, Texas — Riverside 7-2441 2000 S. Front St. — Quincy, Illinois — BAldwin 3-5014

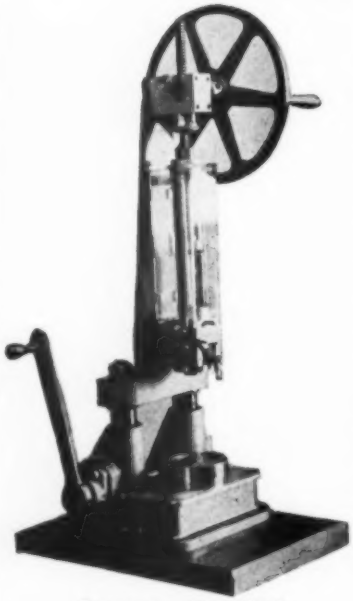
DEVELOPED FOR THE CONSULTING LABORATORY, THIS APPARATUS, IS THE ULTIMATE IN FUNCTIONAL DESIGN AND PERFORMANCE

Our apparatus division has been set up to make all items available to the industry. Prices and descriptive literature on request.

APPARATUS AVAILABLE

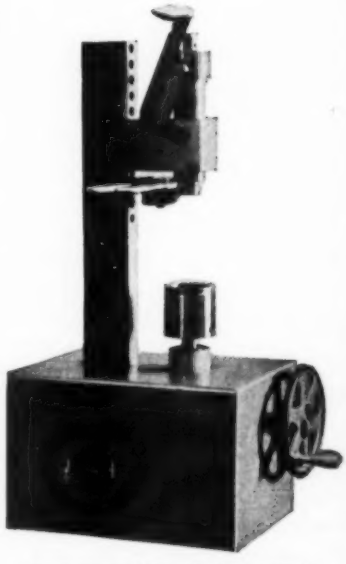
Cont. Filling Corp. Clinch Torque Meter

Liquified Gas Manipulator w/Universal Head
Propellant Manifold for Manipulator
Hand Operated Vial Capper
Change Parts for Vial Capper
One inch opening Can Closing Press
Hydrostatic Test Units
Karl Fischer Pressure Titration Cells
Dead Stop Indicator for Karl Fischer Titrameter
Density Units
High Pressure Test Bombs
Can Sampling Units—Piercing or Valve Actuating
Pressure Gauging Unit—Pressure Balance or Water Filled
Test Ovens—Standard or Custom Built
Instantaneous Chiller Units—Mechanically Refrigerated
Electric Hot Water Test Bath
Hot Water Bath Transfer Baskets Safety Top Tank Racks
Table Tank Rack Combinations
Safety Screen Tubes for Glass Pressure Tubes
Plastic Protective Screens
Gloves and Masks



Foresman Liquified Gas Manipulator

Apparatus Division
ROBERT A. FORESMAN, JR.
(Aerosol Consultant)
1690 Margaret Street
Philadelphia 24, Pa.



Foresman Hand Operated Vial Capper

Property	3,5,5-Trimethyl-hexanal	β-Ethoxypropionaldehyde	Glutaraldehyde
Specific Gravity; 20°C.	0.8304	0.9161	
Refractive Index; 25°C.	1.4210	1.4027	1.4298
Color	Light Amber	Colorless	Colorless
Boiling Point	269°F.	268°F	158°F.[10 mm.]
Melting Point	<—60°F.	—92°F.	
Flash Point, TOC.	129°F.	100°F.	dec.
Acid Number	8.5	17.6	37.3
pH Value	5.3	1.3	3.4
Viscosity; 25°C. in cps.	0.52	0.96	214.0
Optical Rotation	0	0	0
Moisture Content	0.32%	0.5%	—
Water Solubility	0.56%	∞	∞

in aerosol air fresheners, usually in conjunction with a concentrate based upon ethanol. Aside from solubilizing the water content of glutaraldehyde-25%, the ethanol is claimed to enhance the long-term stability of the deodorant by forming an equilibrium system which, with a surplus of ethanol, consists of small amounts of unchanged glutaraldehyde and some 2,6-diethoxytetrahydropyran, with a larger amount of 1,1,5,5-tetraethoxypentane.

Glutaraldehyde controls a variety of household odors. Its unusual effectiveness against ammoniacal and flatus gases also makes it of interest for the elimination of toxic metabolites in closed-cycle systems. The presence of humidity increases its reactivity. To attain maximum stability it is necessary to hold the deodorant in a medium which is slightly on the acid side; [pH = 5, when tested by methods used to determine the pH of essentially non-aqueous aerosol systems[54]]. Otherwise, glutaraldehyde will tend to form hemiacetal polymers of no deodorant value. Phenolics found in perfumes, or anti-oxidants, such as 2,6-di-tert. butyl-4-methylphenol[112] will react with glutaraldehyde to give tetrasubstitution products, and should not be used with it in aerosol formulations.

The methods by which the sophisticated aldehydes control odors is very incompletely understood. They are known to undergo the reactions of oxidation, polymerization, and condensation with a variety of active groupings, such as the hydroxy, thiol, and amine groups, at room temperature. This fact, plus what appears to be a selectivity function against the worst offenders, represents the extent of our knowledge in this complicated field.

The market penetration of the sophisticated aldehydes — including the higher citrus types which have not been discussed individually — has been quite remarkable. They are now used by a number of major merchandisers, either as individual materials to be added to a basic formulation, or as components of special perfumes[113, 114]. If the particular aldehyde possesses a nondescript odor it can be used with any tested perfume fragrance: pine, spice, or floral. In the case of the C_{10}, C_{11} and C_{12} aldehydes, however, the aldehydic citrus odor makes it prudent to use them only with perfumes of similar background. This accounts for the recent appearance of citrus, lemon and orange air fresheners which have an exceptional degree of olfactory re-

Professional Directory

PRODUCT DEVELOPMENT AND EVALUATION

ER

Research—
Catalyst for Industry

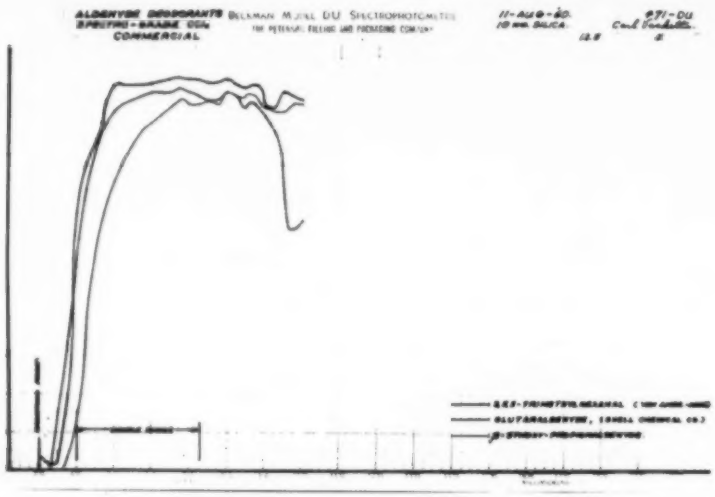
EVANS RESEARCH
and DEVELOPMENT CORPORATION
DEPT. T
250 East 43rd Street
New York 17, N.Y.

AEROFLEX® "P" DIP TUBES

- QUALITY CONTROLLED—Every shipment laboratory tested for crack resistance.
- Ideal for aerosols, atomizers, squeeze bottles and lotion pumps.
- Odorless, non-toxic, resistant to most filler and propellant chemicals, crack resistant through ANCHOR's exclusive formulation of polyethylene.
- Close tolerances maintained. Precision cut and stack packed tubes available.
- Nylon dip tubes extruded for special applications.
- ANCHOR also extrudes in all of the newest materials—polycarbonate, polypropylene, and rigid polyvinyl chloride . . . offering reliable service and on-time deliveries.

WRITE TODAY for "Extruded Plastics" brochure.

ANCHOR
PLASTICS CO., INC.
36-36 36th Street
Long Island City 6, N. Y.
RAvenswood 9-1494



Gas Chromatograph reading

fulgence, and which confer an ineffable sensation of refreshment and well being to the user.

A great deal has been written[19,33], about the use of deodorants which cause the sensation of deodorization by exerting a narcotic, deadening or similar type of soporific effect upon the olfactory nerve extremities. To be realistic, these effects must be considered in terms of both degree and *possible chronic implication*. It is well known for instance, that musks[34], and many other essential oil ingredients cause temporary anesthesia of the olfactory glands. Low-solvency liquids, or those with high viscosities, have been found to inhibit or change odor perception values. There are a few materials which can be atomized and inhaled, which then form films over the respiratory cavity, either by insolubility, reaction with surface moisture, or polymerization; and they also tend to suppress response to odors. The well known physiological antagonism of odors; where two strong accents may be mixed without apparent reactions, and then give a waxey odor or similar weak resultant[35,105], is a further example of desensitization. All these effects are quite temporary. The normal function resumes within an hour at most.

On the other hand, there certainly are a number of narcotic chemicals which are contra-indicated for use as aerosol deodorizers. A few classes of aceteylenics, such as the substituted butynols, as well as simple chlorohydrins, valerian oil, and other chemicals will provide the desired deodorant effect but are quite harmful in any high concentration. Those considering new and untested deodorants for air freshener applications would do well to secure competent medical opinions before proceeding further.

The aldehydes, and in particular, the parent compound, formaldehyde, have been subjected to much criticism from the viewpoint that they exert a narcotic action. Many deodorant claims are found which contain the lurid statement, "Contains NO formaldehyde." In a few instances, labels such as "Narcothene" have purposely been applied to preparations of known formaldehyde content.

When breathed, formaldehyde and other simple aldehydes are readily absorbed through the primary epithelium, to some extent complexing with protein if the concentration is high enough, but generally becoming oxidized to the acid and excreted. These simpler molecules are water soluble and produce some irritation of the upper respiritory tract. As much as 650 ppm. of formaldehyde may be tolerated for several hours without serious effects. Acetaldehyde is less bothersome. Significantly though, the maximum allowable concentration for formaldehyde has been set at 10 ppm., since at levels of about 20 ppm., with very long exposure subacute or chronic irritation of the respiratory tract may be disturbing[115]. These concentrations are never approached by aerosol deodorants when formaldehyde is allowed in concentrations only up to 0.05%.

The higher aldehydes, being less water soluble as a rule, do not affect the upper tract but do impinge on the bronchi and lung. It is therefore safe to submit that the entire aldehyde series, when used at the judicious

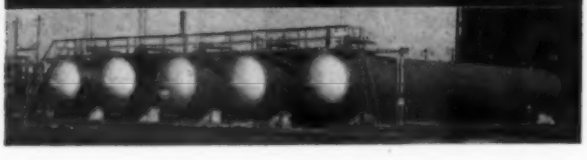
BULK STORAGE SYSTEMS

for Propellants of all types

DESIGNED • ENGINEERED • INSTALLED

For over 30 years companies have called on Thomas Associates to answer their storage needs. The reason: experienced Service in Consulting, Design, Engineering and Construction. Call Thomas today.

H. EMERSON THOMAS & ASSOCIATES, INC.
P. O. Box 270-B • Westfield, N. J. • ADams 2-2800



if'n it's plain or fancy!

Nothing is too fancy for the capable hands of NATIONAL. Our boys just naturally corral every aerosol problem and put their brand of excellence on every job if 'n it's plain or if 'n it's fancy. So saddle up partner, and ride on over. All inquiries confidential.

• Insecticides • Paints
• Cosmetics • Pharmaceuticals
• Chemicals • Foam Products
• Many others.

NATIONAL SPRAY CAN FILLING CORP
6202 Avenue U • Brooklyn, N.Y. • CL 1-3350

PACKERS

ATTENTION MARKETERS!

The leading custom and contract fillers operating in each area are listed on the following pages.

EAST

IMAGINATION • CREATION • REALIZATION

ATi

AEROSOL TECHNIQUES
INCORPORATED

Exclusively private label manufacturer of aerosol cosmetics, pharmaceuticals and chemical specialties.

Bridgeport 5, Conn. EDison 6-0176

Thomasson

OF PA., INC.

AEROSOL FILLING
for Contract and Private Label Marketers

Also Liquid Filling

Complete Research and Laboratory Facilities
Constant Quality Control

Norristown, Pa. BRoadway 5-4355

Private Label and Contract Aerosol Packaging

PURITAN
AEROSOL CORPORATION

- Complete research and lab facilities
- Packaging and marketing help
- Pressure and "Cold Fill"
- Metal, Glass, or Plastic Containers
- Excellent warehousing and shipping facilities

160 WASHINGTON ST. NORTH
BOSTON 14, MASS. RI. 2-3318

Chemicals, Cosmetics, Pharmaceuticals

EAST

GRESTCO

DYES and CHEMICALS
CUSTOM FILL AEROSOLS

• SMALL RUNS •
• SERVICE •
• PRICE •

153 CLASSON AVE.
BROOKLYN 5, N. Y.
MAin 2-6357

STANDARDS MAINTAINED • FORMULAS PROTECTED • QUALITY AEROSOLS •

AEROSOL PACKAGING
LIQUID FILLING
production runs • sample runs
product formulations

pace incorporated
P.O. Box 206 • WILMINGTON 99, DEL. • EAST 9-4151

To All Buyers of
AEROSOL PRODUCTS:

Here are the advantages of a modern manufacturing plant built upon a foundation of over 30 years experience:

1. Contract fillers of both bottles and cans.
2. Pressure and "Cold Fill" facilities.
3. Modern up-to-date, compounding facilities.
4. Complete research and control laboratory.
5. Free product development and sampling.
6. Free Products Liability Insurance.
7. Centrally located plant.
8. Our modern materials handling and shipping rooms can also handle your drop-shipments.

ASSOCIATED BRANDS, INC.
50 WALLABOUT ST., BROOKLYN 11, N.Y.
Tel. ULster 5-2900

EAST

QUALITY & SERVICE IN AEROSOL CUSTOM FILLING...

STALFORT
PRESSURE-PAK CORP.
321 W. PRATT ST., BALTO. 1, MD.

CONSOLIDATED AEROSOL CORPORATION

Custom and private label. Aerosol filling. Cosmetics, pharmaceuticals and chemical specialties in metal, plastic and glass.

Rigid inspection and quality control in one of the most modern plants in the East

CONSOLIDATED AEROSOL CORPORATION
1325 Second Ave.
New Hyde Park, N. Y.
HUnter 8-2330

Old Empire

AEROSOL FILLING

SHAVE CREAM
HAIR LACQUER
COSMETIC SPECIALTIES
PHARMACEUTICAL SPECIALTIES

MT. PROSPECT & VERONA AVES.
NEWARK, N. J. • HUMBOLDT 4-2121
N.Y.C. WORTH 4-7870

EAST

SUN-LAC INC.
"Successful through Service"
274 LAFAYETTE ST., NEWARK 5, N. J.

Aerosol Packaging
Small Runs Solicited
on
Cosmetics, Creams, Foams, Perfumes, Powders, Household Items, Insecticides, Industrial Products, & Plastic Sprays.
We formulate and develop new products. Quality controlled productions; bulk storage facilities; pressure & "Cold Fill" facilities. Special plan for companies requiring national distribution. We supply samples and do experimental work at no charge. Write or phone MA 3-7727 for full information.
Powders—Liquids—Emulsions

Armstrong
Laboratories
CUSTOM, CONTRACT AND PRIVATE LABEL FILLERS OF METAL, GLASS AND PLASTIC AEROSOL CONTAINERS
SEPARATE AEROSOL PHARMACEUTICAL FACILITIES
WRITE OR CALL:
ARMSTRONG LABORATORIES
421 La Grange Street
West Roxbury, Boston 32, Mass.
FAirview 3-7404

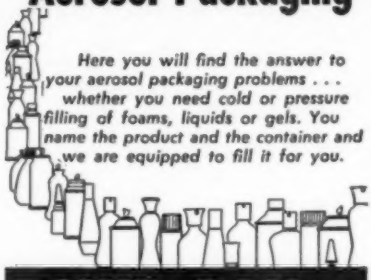
Quality
AEROSOL
FILLING
we will fill only for customers and market no product line of our own

Eska CHEMICAL CORP.
352 Livonia Ave.
Brooklyn, N. Y.
Phone: Dickens 2-5205

FLUID CHEMICAL CO., INC.
1st in Contract Packaging
★ Aerosols
★ Liquid Filling
885-A MT. PROSPECT AVE.
NEWARK, N. J.
HUmboldt 5-2880

EAST

Aerosol Packaging



Here you will find the answer to your aerosol packaging problems . . . whether you need cold or pressure filling of foams, liquids or gels. You name the product and the container and we are equipped to fill it for you.

POWR-PAK, INC.
145 Howard Ave., Bridgeport, Conn.

FAR WEST

CALIFORNIA'S PROGRESSIVE AEROSOL FILLER
Compare our
★ PRICES
★ QUALITY
and CONFIDENTIAL SERVICE
WESTERN
FILLS ALL PRODUCTS
WESTERN FILLING CORPORATION
6423 BANDINI BLVD., LOS ANGELES

CUSTOM PACKERS
Manufacturing Chemists
•
The west's oldest and most experienced aerosol fillers
•
WAREHOUSING — SHIPPING
COLD & PRESSURE FILLING
•
PAR INDUSTRIES, INC.
2193 E. 14th ST., LOS ANGELES, CALIF.

Business too "seasonal"?
The best way to increase your custom filling business is to run a 12-time advertising schedule in this section of the magazine.

concentrations which provide effective use at completely non-pathological conditions, should be considered deodorants and not as narcotic materials.★

This is the first of three installments of Mr. Johnsen's detailed and complete article on the subject. The November installment will include "Metazene" and "Meelium" as deodorants, the role of perfumes, and a discussion of glycols—The Editor.

References

1. Smythe, L. D. R. Phil. Trans. *153-1*, 75, (1857).
2. Helbing, H. & Pertsch, G. U.S. Patent No. 668,815 (1899).
3. Moore, R. W. U.S. Patent No. 1,378,866 (1903).
4. Biginelli M.O.F.A. French Patent No. 981,029 (1951).
5. Rotheim, E. U.S. Patents No. 1,800,-156 (1931) & 1,892,750 (1933).
6. Originally due to Seeman Bros.
7. "Facts & Figures about the Growing Aerosol Market," E. I. DuPont de Nemours & Co. (Inc.), 11, (1959).
8. "Food Topics," Consumer Reports for 1959.
9. "1958 National Survey of Aerosol Products Purchased for Home Use," E. I. DuPont de Nemours & Co. (Inc.), 1958.
10. Resing, H. "A Look Into Osmics, the Sense of Smell" Thesis, University of Oklahoma, 1955.
11. Wieland, J. Acc. Sidgewick, N. "The Organic Chemistry of Nitrogen," 467, (1949).
12. McCord, C. & Witheridge, W. "Odors, Physiology & Control," 29, (1949).
13. Mackay, D. et. al. 135th Am. Chem. Soc. Meeting, Boston, April 1959.
14. Mackay, D. et. al. *Am. Perf. & Arom.* 44, Dec. 1959.
15. Sullivan, J. 135th Am. Chem. Soc. Meeting, Boston, April 1959. Report of work at U.S. Army Quartermaster Research & Engineering Center, Natick, Mass.
16. Poucher, W. "Perfumes, Cosmetics & Soaps," Vol. 2, (1942).
17. Gabelien, K. "Dragoco Report" *8*, 135, (1959).
18. Grun, L. Umschau-Verlag *51*, 465, (1956).
19. Weaver, E. "Control of Odors," Nat. Bu. Stds. Circ. No. 491, (1950).
20. Bohme, H. & Fischer, H. Ber. *75*, 1310, (1942).
21. Traube, H. *J. Am. Chem. Soc. 63*, 2453, (1941).
22. Cook, N. & Schnorf, P. *Helv. Chim. Acta. 27*, 950, (1944).
23. Briner, E. & Schnorf, P. *Helv. Chim. Acta, 27*, 950. (1944).
24. Traube, H. & Bray, G. *J. Am. Chem. Soc. 62*, 3357, (1940).
25. Cronheim, G. *J. Am. Pharm. Assoc. Sci. 36*, 274, (1947).
26. Lebek, G. "Tuberculosis Research," Ludolph Brauer Institute, Munich, Ger. Nov. 1958.
27. Yost & Russell, "Systematic Inorganic Chemistry," 265, (1946).
28. Rovesti, P. Riv. Ital. Eas. *39*, 15/12, (1957).
29. Greenspan, F. et. al. "Peracetic Acid Aerosols," *CSMA Proc.* 42nd Annual Meeting, 59, Dec. 1955.
30. U.S. Patent No. 2,715,611 (1955); Ass. to Monsanto Chemical Co.
31. U.S. Patent No. 2,891,838 (1959); Ass. to Benvenue.

32. Dalbey, J. & Eddy, W. *Soap & Chem. Spec. 18*, 109, Nov. 1942.
33. Herzzka & Pickthall "Pressurized Packaging (Aerosols)," 269, (1958).
34. Backman, P. *The Givaudanian*, 3, May 1959.
35. Best & Taylor, "Physiological Basis of Medical Practise."
54. "Corrision Testing Procedures," Genetron Product Information Bulletin 7160, General Chemical Division, pg. 24, (1960).
105. "Space Deodorants — Opportunities Ahead," A. H. Gee, *Am. Perf. & Arom.*, 61, (June 1960). See also *Aerosol Age*, 51, Aug. 1960.
106. Concerns include: Van Ameringen-Haebler Div., International Flavors & Fragrances; and Alpine Aromatics, Inc.
107. Priv. Comm. Aug. 1960.
108. Shell Development Co. Data Sheet DS-59:2, (1959).
109. H. Stansbury, et. al (Union Carbide Carbon Corp.) U.S. Patent No. 2,648,703 (1953); CA *48*, 7630.
110. Shell Chemical Co., Technical Information Bulletin PD-121, (1959).
111. R. G. Woolford, *J. Org. Chem. 23*, 2042, (1958).
112. Ionol, C. P. Grade; a product of the Shell Chemical Co., widely used as an inhibitor for aldehydes.
113. Descriptive brochure for "Magnador No. 41 MM&R." Product of the Magnus, Mabee & Reynard Corp., used as an aerosol deodorant mixture.
114. "Evaluation of a New Deodorant for Use in Hospitals," N. Schwartau, *Am. J. of Hosp. Pharm.* Vol. 15, 221, Mar. 1958.
115. *Industrial Hygience & Toxicology*, F. A. Patty, Editor. Vol. II, 933, (1949).
122. The results of one testing program indicate that 3,5,5-trimethylhexanal does not destroy a number of standard odorants but acts as a simple masking agent. Priv. comm. Sept. 1960.
123. Bulletin 11316, AF Technical Report 6565PT4 (Wright Air Development Center). Obtainable from U. S. Department of Commerce, Office of Technical Services, Washington, 25, D. C.

Toxic New Product

(*From Page 73*)

application, and in order to provide a basis for comparison, one-half of the surface was left untreated. In the photograph on Page 73 is a wood weir which shows impressive results at the next shutdown (after two weeks). It should be mentioned that the treated surface has not been washed, and that a simple water hosing later removed every bit of paper stock. The heavily covered area, on the other hand, required mechanical scraping. These initial tests were observed for over 12 months, and so far the effectiveness of the antimicrobial film is said to be still readily apparent without reapplication.

The most popular package for the Metasol spray, according to Mr. Waite, is a 50-pound (net weight) steel cylinder conforming to ICC

MIDWEST

ILLBRONZE

IMPECCABLE AEROSOL PAINT PACKAGING

Pioneers and specialists in paint packaging
Offering the finest private label and custom filling facilities
Complete quality control and development laboratories

ILLINOIS BRONZE POWDER CO.
2023 South Clark St., Chicago, Ill.

Aerosol Packaging
Specializing in
AEROSOL PAINTS

Enamels - Lacquers
Wrinkle and Hammertone Finish
Custom Filling
or
Private Label
Complete Aerosol and Paint
Laboratory Facilities

Cleveland Aerosol Packaging Corp.
9801 HARVARD AVE., CLEVELAND 5, O.

CONTRACT AEROSOL, L.P.G., & ENGINE STARTER FILLING

IKI QUALITY
IKI SERVICE

Small quantities accepted. Prompt service with ALL orders.

IKI MANUFACTURING COMPANY, INC.
Phone 144
EDGERTON, WISCONSIN

SPRAY PERFUMES and COLOGNES

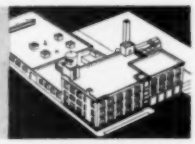
We specialize in the fragrance field — Colognes and Perfume novelties of all kinds — Let us help you with your perfume ideas.

Metered perfume spray containers of all kinds.

MARCY LABORATORIES, INC.
2161 No. California Ave.
Chicago 47, Illinois
Telephone SPaulding 2-3900

MIDWEST

ACRES OF AEROSOL PACKAGING FACILITIES



G. BARR & COMPANY

Highest standards of quality in the industry. Know-how gained in production of hundreds of millions of perfect packages. Creative research. Meticulous quality control. Full cooperation in formula and product development.

General Offices:
G. BARR & COMPANY
Private Label Aerosols
3601 S. Racine Avenue
Chicago 9, Illinois

EVEREADY for AEROSOLS
complete private brand packaging
EVEREADY PRESSURIZED PRODUCTS, INC.
1101 BELT LINE ST. • CLEVELAND 9, OHIO

PETERSON
fills both
LIQUIDS AND AEROSOLS
•
PETERSON FILLING and PACKAGING COMPANY
DANVILLE, ILLINOIS
Phone: HIckory 2-1400

AEROSOL PACKAGING *to fit* YOUR PRODUCT

• No minimum run required and no maximum limit! Rigid quality control is maintained on all production, contract filling or custom packaging.

CHASE PRODUCTS CO.
Maywood, Illinois

MIDWEST

Symbol of Experience in Aerosol Development & Packaging

for Aerosol "Know-How" Call

CONTINENTAL FILLING CORPORATION

123 N. Hazel • Danville, Illinois

Complete Facilities For Packing All Types Of Aerosols

AEROSOL FILLING \ CONTRACT & CUSTOM

- Paints And Inks
- Window Cleaner
- Foam Products
- Insecticides
- Sanitary Supplies
- Cosmetics

Over 100 Tested Private Label Products Available • Warehousing And Drop Shipping Available If Desired • No Minimum Run, No Maximum Run.

aerosols RAYSING Corporation

8005 ALABAMA ST. LOUIS 11, MO.

GARD

A COMPLETE AEROSOL SERVICE

Product Development • Cold or Pressure Filling • Short and Long Runs • Warehousing • Marketing • Merchandising

FOR FOOD, DRUGS, PAINTS AND CHEMICAL SPECIALTIES

GARD now offers the most complete, most modern filling facilities in the industry for all aerosols from food to paint. Minimum production runs—as low as 1,000 cans to 1,000,000 and up! Air-conditioned, humidity controlled throughout.

GARD INDUSTRIES, INC.
Northfield, Illinois

PREPO®

Liquified Petroleum Gas

Filling & Packaging Facilities

Specializing in Butanes and Pentanes

Prepo Fuel for original equipment manufacturers or under private label.

Originator of L. P. G. in disposable containers.

PREPO CORPORATION
Edgerton, Wisconsin

specification 4-BA-240. Queried about why he didn't select a lighter container (since the product is nonflammable and under fairly low pressure), Mr. Waite pointed out that this would have required a further complicated ICC clearance. "The size and shape of the present container," he said, "permits one plant worker to carry it easily to the most inaccessible areas of equipment and plant for application."

SOUTH

AEROSOL and LIQUID FILLING

"Have it packaged in the fast growing South where it is sold."

Large or small quantities
Warehousing and Shipping

PHONE US: TRinity 5-8881

Wyatt Products, Inc.
685 Metal Road, N.E.
Atlanta 9, Georgia

We invite you to check our

- QUALITY
- SERVICE
- PRICES

Custom loaders of Aerosols...specializing in the cosmetic & sanitary supply products. Private label stock available. Strict quality controls.

Aerocos

AEROSOL CORPORATION OF THE SOUTH
P.O. Box 148 • Arlington, Tenn.

TWO PLANTS

for your

Custom and Contract Filling

Claire Manufacturing Co.
7640 VINCENNES AVE.
CHICAGO, ILL.
1200 N.W. 23RD AVE.
FORT LAUDERDALE, FLA.

What about future plans for sale of the product?

According to Mr. Waite, the company expects to extend the use of the slime control product well beyond the paper industry. Manufacturers of paints, adhesives and certain textiles all have the same type of problems, he points out, and there remains a vast field of potential among air-conditioning cooling towers in the large industrial and office buildings. He suggests that wherever water is used in conjunction with an organic material in a manufacturing process, there may be some potential for the Metasol anti-slime material.

Although the company sells its bactericides and fungicides in bulk throughout the world, Mr. Waite emphasizes that the "Metasol K-Spray" and similar products will be sold packaged in aerosol form (rather than in bulk for repackaging under another label). "This decision was made," he said, "because of quality control considerations, combined with the toxicity of the material and its desired end use."

Already in advanced stages of development at Metalsalts' laboratory are a series of new non-toxic sprays which are expected to find extensive use in food processing, milk and similar plants (plus swimming pools) where toxicity might prevent use of the present product. Naturally, these sprays eliminate the need of face masks, rubber gloves, etc., and require only eye protection (goggles)

CANADA

IN CANADA

For All Types of Aerosol-Packages, Cold or Pressure filled, Cans or Bottles, Manufactured to U.S. Specifications and Delivered to Your Canadian Distributors.

John Struthers and Co. Ltd.
Riverside 8-8023
5581 Pare Street, Montreal 16, Quebec, Canada

and adequate ventilation. Dr. Lederer says that these food sprays will contain only ingredients which comply fully with FDA requirements. ★

The Filler Speaks

(*From Page* 79)

With this basic knowledge and experience, efficient, high quality, practical products can be offered to potential merchandisers at an attractive cost.

Q.—Aerosol production has been rising sharply for the past decade. Do you foresee a levelling off period?

A.—I do not. According to recent figures recently released by the Chemical Specialties Manufacturers Association, approximately 600,000,000 aerosols were marketed in 1959. Based on the technical advancements of the past few years in the aerosol field and the increased number and variety of products packaged in push-button containers, I would say that the potential of the aerosol industry is limited only by the intelligent imagination of the people in the industry.

Q.—Do you think any of the leading product types (insecticides, room deodorants, hair sprays and shave creams), have yet hit a saturation point as far as future market growth is concerned?

A.—I do *not* believe that they have hit a market saturation level. I firmly believe that the plateau that these products have hit at this time is due to the fact that research and development has not done enough in these fields to produce products that meet the discriminating requirements of the end user. We feel confident that with proper emphasis on improving these products from a chemical and physical standpoint, we can reap the reward of future consumer use and expansion in these "early" fields of endeavor.

Q.—Do you agree with the opinion that aerosols will soon take over at least 80% of cologne and perfume packaging?

A.—I believe that the pressurized cologne and perfume market will soon rise *above* the 80% figure. This is because pressurized fragrances are both economical and convenient to use. From a technical standpoint the products, when properly formulated, have a greater shelf-life in a sealed pressurized unit than in the conventional bottle. It is obvious, from the enthusiastic response of the consumer, that she is highly pleased and enjoys using this type container for her favorite fragrance. As long as packaging costs and quality products can continue in the present trend (or be improved upon), we will have a good sound market with a high potential growth. ★

Whither the Filler

(*From Page* 65)

filling speeds have been currently stabilized at about 60 per minute. They could be doubled, suppliers argue, if the filler would devote more "engineering time" to improving his existing equipment. Thus production time could be made to "pay off" at a considerably stepped-up rate. Not only production speeds, but filling, gassing, labeling, valve inserting and leak testing methods could be studied intensively and improved substantially.

Such suggestions as these are of necessity, of the "shotgun variety." Of course there *are* custom fillers who have adequately staffed sales organization (that is those who have a desirable balance of research-to-sales personnel). There are also several who are "machinery-oriented," and are constantly coming up with improvements in filling and container handling techniques. But for each filler who meets these admittedly arbitrary qualifications, there are four or five who don't. In either case, a new look at company policies and primary effort would appear to be warranted. ★

NOW . . . all the solids formulated in a single stick for loading

SNOW

you just drop it into your aerosol container before you add your propellant and valve.

Licensed under Patent 2,764,454

- Gives you an amazingly simple production.
- Gives you important savings in costs.
- Assures precision cold or pressure filling.
- No dust or boil-over. No mixing of powders.
- Standard colors are WHITE, RED, and BLUE. For special colors, send sample for matching.

Write for Information and Samples to

BALTIC CHEMICAL

315-319 Fourth Ave., Brooklyn 17, N. Y.

We take your product and — "We add the spray, take nothing away"

Sprayon

OLDEST AND LEADING CUSTOM LOADER OF AEROSOL SPECIALTIES

Complete facilities for all types of pressurized product development and production. Hot and cold filling, long and short runs. Our production work is unconditionally guaranteed.

SPRAYON PRODUCTS, INC. 2075 E. 65 ST., CLEVELAND 3, OHIO

druk pak INC.

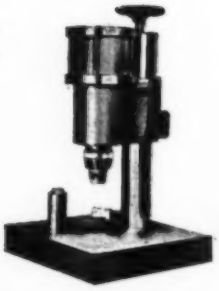
Supplying internationally for aerosols

- Laboratory Equipment
- Production Machines, All Types
- Formulations and Concentrates
- Plant Layout — Consultation

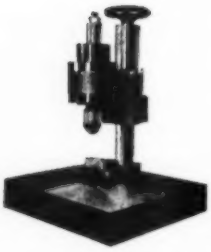
1. Laboratory Clincher DP-104 Inter-changeable Tools for Metal Cans and Glass Bottles.

2. Laboratory and Small-Run Pressure Loader DP-110

3. Propellant Pump WM-DP 385 Fully automatic, compressed air operated. Empties cylinders, mixes propellants, guarantees liquefaction.



4. Valve Clincher WM-DP 350 Semi-automatic, compressed air operated. Capacity: 28-30 per min.



5. Nitrogen Gasser WMP-DP 390 Semi-automatic, compressed air operated. Capacity: 28-30 per min.

Catalogues and Prices on Request

Manufacturer:
Johann Waldherr O.H.G.
Kafertaler Strasse 162
Mannheim, Germany

Sales Representative:

druk pak, inc.
Merkurstrasse 36
Zurich F
Switzerland

Makes
ROUND BOTTLES, JARS
CANS, CONTAINERS
Get in Line!

Styl-O-Matic ROTARY UNSCRAMBLING TABLE

• Cartons of bottles, jars, cans or containers are inverted to the tilt top table and their contents pushed onto the revolving disc. Units are *automatically regimented and despatched in single file* to the conveyor.

LOWERS HANDLING COSTS — ACCELERATES PRODUCTION

• Conveyor carries units to other operations such as filling, capping, labelling, etc. Handles up to 100 units per minute depending upon diameter.

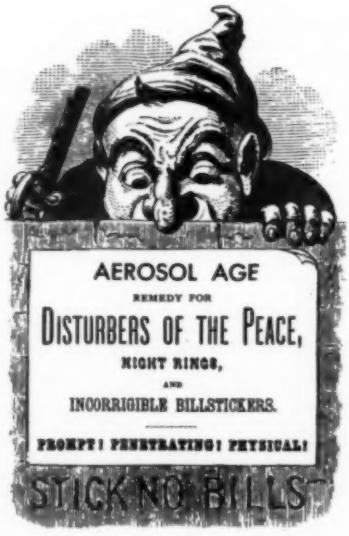
MAIL THIS COUPON FOR FULL DETAILS

ISLAND EQUIPMENT CORP.
P.O. Box 38-276
Miami 38, Florida

Please send particulars on the Styl-O-Matic Rotary Unscrambling Table.

Company .....
By .....
Address .....
City ..... State .....

Have technical problems?



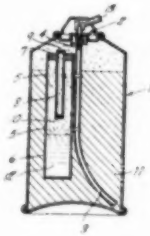
Aerosol Age is the best way to keep up with new packaging techniques, developments, products.

New Aerosol Patents

Listed below is a brief review of recent patents pertinent to the aerosol and related industries.

Complete copies of these patents may be obtained by writing to the Commissioner of Patents, U. S. Patent Office, Washington 25, D. C., and remitting 25 cents for each copy desired.

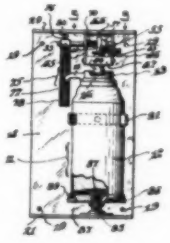
2,950,846. THREE PHASE DISPENSER. Issued August 30 to Ronald Clark, Hanworth, and David John Alexander, Teddington, England, assignors to Lever Brothers Co., New York.



A dispensing device for dispensing fluent materials by vaporous pressure having a container for enclosing the fluent material to be dispensed, a valve mounted on the container for releasing the fluent material, means to maintain the fluent material under vaporous pressure, said means comprising a receptacle disposed within the container for enclosing a liquid propellant, a tube disposed through the walls of the receptacle and extending into the receptacle a predetermined distance so that the inner end thereof is above the level of liquid propellant when said device is in any position and the outer end is in communication with said container, and said tube having an aperture at each end thereof to communicate the propellant vapor in the receptacle with the fluent material in the container.

•

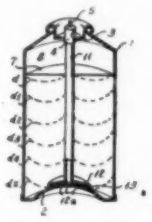
2,948,308. DISPENSING OF PRESSURIZED MATERIAL. Issued August 9 to Louis C. Regina, 200 New Jersey Ave., Phillipsburg, N. J.



In a dispensing receptacle for containers of pressurized material of the type having a discharge nozzle projecting laterally and downwardly therefrom, valved means within the container for controlling the flow of material through said nozzle, a flexible top wall on said container for actuating said valved means, a slidable plunger mounted in the receptacle and movable toward and away from the flexible top wall of said container, a cam member mounted in the receptacle having the cam surface thereof bearing against the upper end of said slidable plunger for reciprocatory movement of the plunger against the flexible top wall of said container to effect the operation of said valved means, means carried by the receptacle for supporting an object onto which the material is to be dispensed, means for adjusting the position of said supporting means whereby the object supported thereby is positioned offset from the container and beneath the discharge end of the nozzle, and means engageable by the object on said supporting means for operating said cam member when the object is inserted into the receptacle to cause a quantity of the material to be discharged through said nozzle onto the object.

•

2,950,031. LIQUID STREAM DISPENSING PRESSURE PACKAGE FOR HIGH VISCOSITY LIQUIDS. Issued August 23 to Robert H. Abplanalp, Bronxville, and Joseph C. Pizzurro, Scarsdale, N. Y., assignors to Precision Valve Corp., Yonkers.



A dispensing package for gaseous pressure packed high viscosity liquids, dentifrices, creams and like materials comprising: a container having an upwardly domed bottom, an outlet valve for said container, a dip tube connected to said outlet valve and extending to a point substantially central of the container and near the bottom thereof and there provided with a radially disposed upwardly domed baffle the chordal plane of the periphery of which intersects the domed bottom of the container, said baffle being of much greater diameter than the dip tube, with the periphery of said baffle spaced from the bottom to provide between them a shallow inlet mouth, whereby substantially all the material within the container may be dispensed before cavitation permits the escape of gaseous pressure through said mouth.

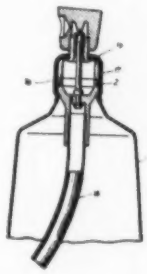
•

2,949,373. PRESSURIZED POLISHING COMPOSITION. Issued August 16 to Edward R. Kendall and Gerard W. Meister, Chicago, assignors to Simoniz Co., Chicago.

A pressurized polish product consisting essentially of about 0.1-25 parts of a propellant that is gaseous at ambient temperatures and atmospheric pressures and about 99.9-75 parts of a polishing composition, the polishing composition consisting essentially of: about 10-30% of finely divided abrasive; about 5-16% of a wax; about 2-12% polydialkylsiloxane; about 40-75% of a hydrocarbon solvent; about 1-4% of an ethylene gycol monoalkyl ether having 1-7 carbon atoms in the alkyl group; and about 1-10% of an oleophilic amorphous thickener dispersible in said solvent, all said parts and percentages being by weight.

•

2,949,243. AEROSAL VALVE. Issued August 16 to Wilhelm Joseph Raehs and Hans Rauchmann, both of 26 Neustrasse, Stolberg, Rhineland, Germany.



An aerosol valve comprising a fixed stationary valve body, a valve seat defining an outlet passage for the contents of an aerosol container to which the valve is attached, said valve seat being positioned in sealing engagement with said valve body and movable in relationship to said valve body for movement upon manual actuation to a position in spaced relationship to said body, and a movable diaphragm connected for movement with said valve seat, dimensioned and positioned to be acted upon by the pressure in an aerosol container to which the valve is attached, to resiliently force the valve seat into sealing engagement with the valve body.

•

2,948,439. REINFORCED GLASS AEROSOL CONTAINERS AND METHOD OF MAKING SAME. Issued August 9 to William S. Glover, Vineland, and Joseph F. West, Millville, N. J., assignors to Wheaton Glass Co., Millville, N. J.

A container adapted to contain a product under pressure to be dispensed in aerosol form comprising a frangible bottle having a discharge opening, said bottle having at least one linearly projecting ridge, a continuous sheath of elastically expansible plastic material freely overlying substantially the entire exterior surface of the bottle and secured to said surface in sealing engagement therewith only adjacent said discharge opening, said bottle having a plurality of spaced localized external projections underlying said sheath along said ridge and extending from and beyond

the line of said ridge, to produce substantially point impact location on said ridge, said sheath being elastically expansible by said pressure when released upon explosive fracture of the bottle, said sheath having tensile and tear strengths to withstand the initial explosive force and when expanded having tensile and tear strengths operable within the elastic limit of said sheath to confine and retain said pressure and the fracture fragments of the bottle, and said sheath having at least one vent therein operable upon expansion of said sheath to gradually exhaust said pressure therefrom while still retaining therein the fracture fragments of said bottle.

•

2,947,449. LIQUID DISPENSING APPARATUS AND VALVE. Issued August 2 to Manuel Emil Hernandez, New York, assignor to Colgate-Palmolive Co., Jersey City, N. J.

A dispensing container adapted to dispense a plurality of distinct liquid charges under the influence of a single, self-contained compressed pneumatic propellant which comprises an outer casing having a discharge outlet in the upper part thereof, a valve closing said outlet, a siphon tube communicating said valve with the bottom of said outer casing, an inner casing deformable under pressure positioned within said outer casing and having a separate discharge outlet, a valve closing said separate discharge outlet, a first of said distinct liquid charges in said outer casing, and a second of said distinct liquid charges of different composition in said inner casing, one of said casings including, in admixture with the liquid charge therein, said compressed, liquefied pneumatic propellant for directly forcing a mixture of said pneumatic propellant and the liquid charge in admixture therewith through the outlet thereof when the valve therein is operated and for indirectly forcing the liquid charge from the other casing through the outlet therein when the valve therein is operated.

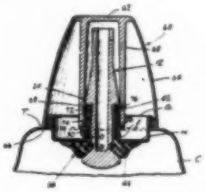
24,863 (reissue of 2,736,665). METHOD OF STABILIZING SPRAYABLE PAINTS. Issued August 30 to Edmund Rogers, South Euclid, Ohio, assignor to the Engine Parts Manufacturing Co., Cleveland.

A method for stabilizing pigmented lacquer compositions in which the pigment ordinarily has a tendency to agglomerate or settle to irreversible masses, which comprises adding to said lacquer an approximately equal volume of a fluoro-chloromethane *selected from the group consisting of difluoro-dichloromethane and mixtures thereof with trichloro-fluoromethane.*

•

2,947,451. PROTECTIVE COVER FOR A DISPENSING VALVE ASSEMBLY. Issued August 2 to Fred F. Suellentrop, Mehlville, Mo.

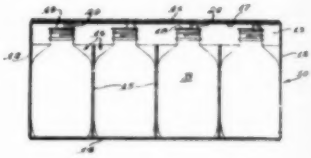
A protective cover for a dispensing valve assembly of the character disclosed, said assembly being mounted centrally in the closure member incorporated in the top wall of a pressurized container and consisting of a resilient grommet having a therewith cooperating tiltable generally tubular valve stem extending therethrough, said grommet including a sleeve segment



and an integral therewith neck segment that has a downwardly outwardly tapered external periphery, said sleeve and neck segments projecting upwardly above the bottom wall of the closure member and said stem projecting upwardly above the top of the sleeve segment, the protective cover aforesaid comprising integrally in combination: a top wall merging into an outwardly flared cylindrical side wall that terminates at the bottom in a circular rim portion; a tubular section depending centrally from said top wall and having an internal diameter slightly exceeding the largest external diameter of said stem; and an internal thread formation in the lower end portion of the tubular section; said thread formation being continuous and helically generated from a point coincident with the bottom edge of said section and having its thread crests slightly rounded, in consequence whereof when said cover member is manually pressed downwardly from above about the projecting portion of the valve stem until the bottom rim of the cylindrical side wall contacts the top wall of the container, the internal thread formation aforesaid of the tubular section will deform the external peripheries of said grommet sleeve and neck segments into frictional threaded engagement therewith whereby to provide a hermetic seal about the valve stem, to obviate fortuitous displacement of said cover, and to simultaneously preclude tilting of said valve stem.

•

2,950,814. SEALING MEANS FOR EMPTY GLASS CONTAINERS. Filed August 30 by John W. Thompson Jr., Meno Park, Calif., assignor to Owens-Illinois Glass Co., Toledo.



In combination a shipping carton comprising side and end walls, a bottom and top forming cover flaps, a cell-type filler in the carton, empty open bottles or jars in the cells of the filler positioned with their open ends facing in the same direction, the open ends generally being in a common plane, a sealing tab carrying sheet at the open ends of the bottles or jars substantially corresponding in area and outline with the interior of the carton bottom, tabs individual to and removably adhesively secured to the bottles to close their open ends and elongated flexible connectors between the tabs and sheet whereby the bottles may shift laterally and axially independently relative to the sheet and carton without separating the tabs from the bottles.

•

Chemway Names McNamara

The Chemway Corp., Mountain View, N. J., has appointed Leo J. McNamara assistant to the president of its Lady Esther Division. He will assist in sales administration of the division's cosmetic products.

SKANDINAVISKA AEROSOL

A step to a growing market, SWEDEN.

SKANDINAVISKA AEROSOL AKTIEBOLAG can fill your product. Complete filling lines for all types of aerosol packages, cans or bottles and with all types of propellants including nitrogene, butane, propane and carbon dioxide.

Largest contract filler in Scandinavia

Virebergsvagen 19, Stockholm-Solna.

SPECIAL OFFER

Complete sets of Aerosol Age copies for the years 1956, 1957, 1958. $10 plus postage for each year (in the U. S.) and $20 including postage for overseas orders.

Circulation Manager
Aerosol Age
P. O. Box 31, Caldwell, N. J.

CLASSIFIED ADVERTISING

Address all classified replies to Box Number c/o *Aerosol Age*, PO Box 31, Caldwell, N. J. Rates for "Help Wanted" advertisements are 20¢ per word; minimum charge $3.00. Rate for individuals seeking employment is 5¢ per word, $1.00 minimum. Advertisements of new machinery, products and services accepted at the rate of $10.00 per column inch. Minimum space, one inch. Copy closing date, 10th of preceding month. *Checks must accompany all orders.*

SITUATIONS WANTED:

EXECUTIVE-SALES-MANAGEMENT

Skilled, experienced, manager of profitable, volume, industrial sales of packaging and plastics products and services. 15 years top-level sales of plastic injection, compression, transfer, and blow-molding services. Heavy experience in contract packaging of aerosols and liquid products. Extensive personal and industry contacts. Write Box 229, Aerosol Age, P.O. Box 31, Caldwell, N. J.

MISCELLANEOUS:

Export Firm needs aerosol enamels, lacquers, multicolors, detergents, insecticides, agricultural & garden specialties, waxes, and all types of aerosol specialties and products. Write P.O. Box 11, Woolsey Station, Long Island City 5, N. Y.

Trager to Hazel Bishop

Millie T. Trager has been appointed advertising and promotion manager at Hazel Bishop, Inc., New York cosmetics marketer. She had been a supervisor on the Procter & Gamble account at Grey Advertising Agency.

FOR SALE:

FOR SALE—7500 lbs. new surplus nickel plated 3/16" steel ball bearings, in original cartons. Price 20¢ lb. for lot, F.O.B. Hooz Machinery Co., 6825 So. Santa Fe Ave., Huntington Park, Calif.

P&G Shifts Top Execs

Procter & Gamble, Inc., Cincinnati, has named C. M. Fullgraf to the post of manager of Thomas Hedley & Co., its British subsidiary. He had been manager of the Toilet Goods Division. E. A. Snow will take over as vice president of the Toilet Goods Division.

•

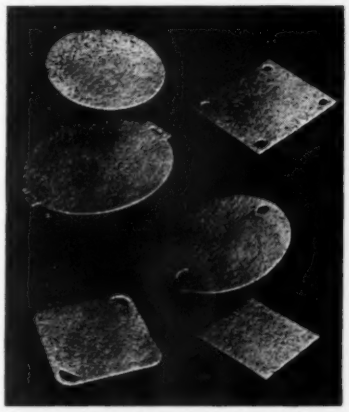
Plan New Pyrethrum Plant

A new pyrethrum extraction plant with double the capacity of the existing installation, is under construction at Nakuru in Kenya's Rift Valley Province. The new plant, to cost $448,000, will process 7,200 tons of pyrethrum a year. It will be built alongside the existing factory, which processes 3,600 tons a year.

Kuenstler to Abrams Post

Walter P. Kuenstler has been named to the new post of executive vice president of the Hudnut-DuBarry Division of the Warner-Lambert Pharmaceutical Co., Morris Plains, N. J. He replaces George J. Abrams, division president, who resigned recently. Mr. Kuenstler had been director of marketing development for the company's Consumer Products Division.

For finer Aerosol Products Industry uses ERTEL ASBESTOS FILTER SHEETS and FILTERS

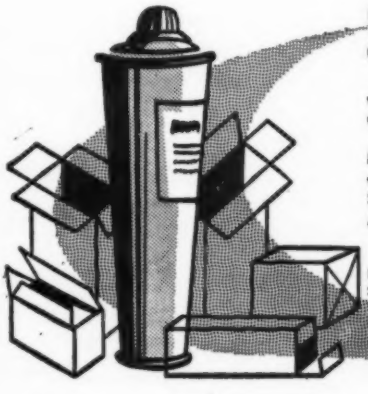


To fit most filters—10 Porosities

WRITE FOR TYPICAL PRODUCT APPLICATION CHARTS & GUIDE

ERTEL ENGINEERING CORP.

18 FAIR ST., KINGSTON, N. Y.



DIE AEROSOL-SPRÜHDOSE –

die herausragende Verpackung unserer Zeit!

Verwenden Sie die Aerosol-Sprühdose als Verpackungsart für Ihre verschiedensten chemisch-technischen und kosmetischen Produkte. AEROSOL-SPRÜHDOSEN sind ein Ausdruck unserer Zeit, sie sind:

Einfach, sauber und bequem in der Handhabung.

MODERN PRAKTISCH SPARSAM

Wenden Sie sich in allen aerosol-technischen Fragen an die älteste Abfüllstation Deutschlands, an die SPRÜHTECHNIK GMBH. Wir stellen Ihnen gern unsere langjährigen Erfahrungen kostenlos zur Verfügung.

Aus unserem Programm: Wir übernehmen Ihre Abfüllaufträge im Lohn.
Wir stellen Ihnen ausgearbeitete und bewährte Rezepturen zur Verfügung.
Wir entwickeln Ihre Produkte auf der Aerosolbasis versandreif.

Unser umfassendster Kundendienst sowie erfahrene Chemiker unseres Laboratoriums stehen Ihnen dabei zur Verfügung.

Wenden Sie sich daher vertrauensvoll an

SPRÜHTECHNIK GMBH, Rheinfelden/Baden

Trade Mark Applications

Applications for registration of the following trademarks were published in recent issues of the *Official Gazette* of the U. S. Patent Office. In not all cases are there strictly aerosol trademarks, however, many of the products listed below come within the category of those for which a possible future use in aerosols is foreseen.

AEROSHINE, for furniture polish. Filed March 28 by American Home Products Corp., d.b.a. Boyle-Midway, N. Y., reporting first use Sept. 2, 1959.

GOLDEN CHALICE, for cosmetic products and toilet preparations, including perfumes, colognes and hair preparations. Filed Feb. 26 by John H. Breck, Inc., claiming first use Dec. 9, 1959.

Schiaparelli VOYAGEUR, for colognes and perfumes. Filed Jan. 28, 1959, by Perfums Schiaparelli, Inc., New York, giving first use as Dec. 8, 1958.

KEPONE, for acaricides; toxic composition for insecticides and acaricides. Filed March 21 by Allied Chemical Corp., New York, with first use reported as May 13, 1958.

NANKOR, for insecticides, miticides and parasiticides. Filed Jan. 11 by the Dow Chemical Co., Midland, Mich., with first use claimed for Nov. 24, 1959.

PIXIE SPARKLE, for chemical preparation to be applied to plant leaves for adding luster thereto. Filed June 29, 1959, by Teitelbaum Bros., Evanston, Ill., with first use given as June 1 of same year.

SCENT OF MYSTERY, for eau de cologne and after-shave lotion. Filed Feb. 11 by Michael Todd Jr., New York, reporting first use Sept. 14, 1959.

Gene Rose
QUALITY PRODUCTION — Pioneers in the aerosol field — utilizing the most advanced methods and modern equipment.
• thorough quality control
• on time delivery
CONFIDENTIAL PRODUCT DEVELOPMENT — Our staff transforms your "aerosol" ideas into a finished "ready-to-market" package.
increase your sales
by pressurizing your product
TOP RESEARCH AND FORMULATION Combining aerosol experience with imagination to produce a superlative aerosol product.
Gene Rose company, inc.
1637 S. Kilbourn Avenue Chicago 23, Illinois

ACROLITE PROTECT-A-HAND, for hand protecting foam cream with lanolin. Filed June 2, 1959, by Murray P. Poznak, Irvington, N. J., giving first use May 25 of same year.

GOLDEN ACCENT, for toilet water. Filed June 22, 1959, by the Fuller Brush Co., Hartford, claiming first use on or about May 9, 1959.

FULVIDERM, for antifungal topical preparation. Filed Sept. 20, 1959, by Schering Corp., Bloomfield, N. J., with first use reported as Aug. 6, 1959.

CONTACT-AID, for chemical spray to be applied on photographic film to eliminate Newton Rings. Filed Dec. 9, 1959, by Sun Chemical Corp., New York, giving first use Sept. 4, 1959.

IMPRUDENCE, for perfumes and other cosmetics. Filed July 23, 1959, by Les Parfums Worth de Paris, Inc., New York, reporting first use July 1, 1938.

SUPER GUARD, for insecticides. Filed Jan. 21 by Swift & Co., Chicago, claiming first use June 19, 1959.

DEDORAN, for room deodorants. Filed Feb. 18, 1959, by Antoine Francois Peyron, Paris, France, with first use claimed under French patent dated Sept. 2, 1958.

MOLI-SPRAY, for lubricants, namely, molybdenum disulfide combined with an aerosol for spraying surfaces. Filed March 27, 1959, by Bemol, Inc., Boston, with first use claimed for Feb. 20, 1959.

K-34, for Hexachlorophene incorporated as an ingredient in shaving cream. Filed Jan. 19 by the Gillette Co., Boston, with first use given as Aug. 12, 1947.

SET'N'GLO, for hair setting lotion. Filed Feb. 10 by Sea Breeze Laboratories, Inc., Pittsburgh, giving first use as Jan. 27.

BELOVED MOMENT, for perfumes, colognes and dusting powder. Filed Feb. 29 by Prince Matchabelli, New York, with first use reported as Feb. 9.

ANNIVERSARY, for perfumes and colognes. Filed May 2 by Muriel Bell, Inc., New York, reporting first use as April 14, 1947.

ROSE-ALL, for chemical spray used as an insecticide, miticide, fungicide on roses, flowers and shrubs. Filed May 27, 1959, by Doggett-Pfeil Co., Springfield, N. J., giving first use as Jan. 9, 1958.

SPRIG, for liquid perfume for general deodorant use except upon the person. Filed Oct. 15, 1959, by Macfee Manufacturing Co., Elgin, Ill., reporting first use as April 1 of same year.

PERK UP, for resin base starch spray. Filed Feb. 26 by T. M. Products Co., Chicago, giving first use as Feb. 19.

INVISIBLE HAT, for hair setting compound. Filed July 27, 1959, by Noreen, Inc., Denver, claiming first use on or about June 2, 1959.

CHARLES ANTELL, for shaving cream. Filed March 9 by B. T. Babbitt, Inc., New York, with first use reported as on or about March 1.

COW-TENT, for insect repellents and insecticides. Filed March 23 by McLaughlin Gormley King Co., Minneapolis, with first use claimed on or about Aug. 7, 1958.

DIXIE WHIP, for liquid vegetable derived product in a pressurized containe which dispenses the product in whit form for use as a topping for de salads and the like. Filed April 7, 1958, b Easter Topping Corp., Buffalo, N. Y., with first use given as January, 1960.

SATIN*SHAV, for cream for use women as a shaving cream and as a sk moisturizer. Filed Dec. 28, 1959, by De Bellco Products Corp., Skokie, Ill., giving first use as Oct. 1 of same year.

•

Langdon to O-I Post

The appointment of Richard H. Langdon to the position of director of development and engineering for its Closure and Plastics Division has been announced by the Owens-Illinois Glass Co., Toledo. Mr. Langdon, manager of the Closure and Plastics Division's Glassboro plant for the past eight years, will be stationed at the company's headquarters in Toledo.

A 1931 graduate of the U.S. Naval Academy at Annapolis, Mr. Langdon joined O-I as an industrial engineer in 1936 after sea-going service with the Navy's Atlantic Fleet. During four years of active duty during World War II, he served as an instructor at Annapolis and as an engineering officer with both the Atlantic and Pacific Fleets.

Before becoming Glassboro plant manager in 1952, Mr. Langdon managed the St. Charles, Ill., closure and plastic plant for three years.

•

Yardley Names Two in Sales

Yardley of London, Inc., New York, has named Fred J. Fitzgerald to the newly-created position of national sales manager and Donald J. Flannery as field sales manager.

Designers and Suppliers of
Refrigeration Systems
Fluid Handling Systems
Heat Test Tanks
Conveyors
System Components
for
The Aerosol Packaging Industry

Wallace Company
41 California Street
Bridgeport, Connecticut

Index to Advertisers ▸▸ October 1960

—A—

Action Plastics, Inc. 119
Aerated Container Corp. 91
Aerosol Corp. of the South 144
Aerosol Machinery Corp. 136
Aerosol Research Co. 3
Aerosol Techniques, Inc. 97, 141
Alfco, Inc. 95
Allied Chemical Corp., General Chemical Division 86, 87
Alpine Aromatics, Inc. 109
American Can Co. 62, 63
Anchor Plastics Co., Inc. 139
Armstrong Laboratories 142
Associated Brands, Inc. 141

—B—

Baltic Chemical Co. 145
Barr, G., & Co. 104, 143
Bridgeport Metal Goods, Inc. 135
Builder's Sheet Metal Works, Inc. 129
Buschman Products Inc. 106

—C—

Chase Products 29
Antoine Chiris Co. 107
Chisholm-Ryder Co. of Pa. 128
Claire Manufacturing Co. 144
Cleveland Aerosol Pkg. Corp. 143
Consolidated Aerosol Corp. 141
Continental Can Co. 10
Continental Filling Corp. 4, 144
Corken's Inc. 32
Cowles Chemical Co. 111
Croda, Inc. .....Aug.
Crown Cork & Seal Co. 14

—D—

Dow Corning Corp. 33
Druk-Pak, Inc. 146
du Pont de Nemours Co., E. I. ..16, 23

—E—

Eastern Cap & Closure Co. 132
Emson Research, Inc. 15
Ertel Engineering Corp. 149
Eska Chemical Corp. 142
Ets. De Trevise 132
Evans Research & Development Corp. 139
Eveready Products, Inc. 143

—F—

Fairfield Chemical Division, Food Mach. & Chem. Corp. 75
Felton Chemical Co. 88
Fleuroma, Inc. 101
Florasynth Laboratories, Inc. 136
Fluid Chemical Co. 142
Walter Frank Organization 117
Fries & Fries, Inc. 128
Fritzsche Bros., Inc. 9

—G—

Gard Industries, Inc. 144
Geigy Agricultural Chemicals Div. Geigy Chemical Corp. 99
General Aniline & Film Corp. ...Sept.
Givaudan-Delawanna, Inc. 78
Grestco Dyes & Chemicals Co. ... 141

—I, J—

IKI Manufacturing Co. 143
Island Equipment Corp. 146
Jet Specialty Co. 115
JG Machine Works 7

—K, L—

Karl Keifer Co. 11
Kaysing Korp. 144
Kiwi Coders Corp. 133
KLM-Royal Dutch Airlines 130
Labelette Co. 115

—M—

Magnus, Mabee & Reynard Inc. .. 20
Marcy Laboratories, Inc. 143
Master Tank & Welding Co. 138
McLaughlin-Gormley-King, Inc. . 31
Mettler Instrument Corp. .....Sept.
Mohawk Furniture Finishing Products, Inc. 136
Motomco, Inc. 127

—N—

Narva Products Inc. 112
National Chem. & Plastics Co. .. 12
National Spray Can Filling Corp. 140
Newman-Green, Inc. 19
Norda 64

—O, P—

Ohio Rubber Co. Division, Eagle-Picher Co. 124
Oil Equipment Laboratories, Inc. 28
Old Empire, Inc. 137
Owens-Illinois Glass Co. 84
Pace, Inc. 131, 141
Par Industries, Inc. 122, 142
Peerless Tube Co. 81
S. B. Penick & Co. 22
Pennsalt Chemicals Corp. 24
Penn Cork & Closures, Inc. 126
Peterson Filling & Packaging Co. .....3rd Cover, 143
Pfizer, Chas., & Co. 21
PFW 17
Pharma Plastics Inc. 128
PMC Industries, Inc. 103
Powr-Pak, Inc. 142
Precision Valve Corp. 34
Prentiss Drug & Chemical Co. 13
Pressure Pak Inc. 132
Prepo Corp. 144
Puritan Aerosol Corp. 141

—R—

Richford Corp. 123
Risdon Mfg. Co. .....Sept.
Rohm & Haas Co. 27
Gene Rose Co. 150
Roubechez, Inc. 30
Roure-Dupont, Inc. 120

—S—

Schimmel & Co. 116
A. Schrader's Son Division Scoville Manufacturing Co. 6
Skandinaviska Aerosol A.B. 148
Sprayon Products, Inc. 145
Spruhtechnik GMBH 149
Stalfort Pressure-Pak. 2nd Cover 141
Sun-Lac, Inc. 142
John Struthers & Co., Ltd. 144
Super Whip Valve Co. 121
Synfleur Scientific Labs., Inc. 25

—T, U, V—

H. Emerson Thomas & Assoc. 140
Thomasson of Pa., Inc. 141
Tube Manifold Corp. 134
Union Carbide Chemicals Co. ..26, 110
United States Can Co., Subs. of Victor Metal Products Corp. 108
U. S. Industrial Chemicals Div. National Distillers & Chem. Corp. 114
Valve Corp. of America ....4th Cover
van Ameringen-Haebler, Div. International Flavors & Fragrances 83
Velsicol Chemical Corp. 61

—W—

Wallace Co. 150
West Penn Mfg. & Supply Corp. 98
Western Filling Corp. 142
S. S. White Dental Mfg. Co. ....Sept.
Wheaton Plasti-Cote Co. 60A
Wyatt Products Inc. 144

OVER THE TRANSOM

AS WAS anticipated in Washington press circles, last month the Food and Drug Administration was brought into the hotly-fought Presidential Campaign. Arthur S. Flemming, Secretary of Health, Education and Welfare, who is expected to keep his job if Vice-President Nixon is elected, began a tour of from 30 to 50 major cities in the country to "talk up " his plans for strengthening the department if the Republicans win. Included in these plans are new regulations for the FDA and more adequate control of drug manufacture by means of increased factory inspection and mandatory reporting of adverse effects of new drugs. Secretary Flemming's campaigning will consist mainly of breakfasts or lunches with leaders of the drug, cosmetic, and education fields. However, at the same time Mr. Flemming is stumping for his candidate, Gov. G. Mennen "Soapy" Williams, widely believed to be the Democratic nominee for HEW, is also campaigning for Senator Kennedy throughout the Midwest. And he too is taking the "tough line" about HEW. Apparently no matter *which* party wins, the FDA may be the real winner from the standpoint of increased budgets. legislative powers, and manpower.

"Crest" toothpaste has *not* hitherto been marketed as a pressurized package, as was incorrectly reported in the editorial columns of this magazine last month. Procter & Gamble points out that "Crest," a literal "sell-out" since its endorsement by the American Dental Association, may have been logically mistaken for "Gleem," another P&G product which is currently being marketed in aerosol form.

* * *

The World Series this year should be of interest to aerosol marketers everywhere, if not from a baseball standpoint at least from that of aerosols. It will be used this year to kick off the national advertising campaign for Gillette's new aerosol deodorant for men, "Right Guard". Already stock in drug stores in attractive counter displays, we hear the product is moving well even before this costly campaign begins.

* * *

The September issue of American Home Magazine, with a circulation of 3.7 million, carried a four-page feature on aerosols generated by the Aerosol Division's Publicity Campaign. It should be a wonderful boost for aerosol paints.

Remember that new light tinplate, developed by U.S. Steel and supposedly "ready" by late 1961? Now called "Ferrolite", it has been brought along very quickly and has already been tested successfully in quart-sized motor oil cans and frozen juice cans. By early next year, look for some research work with aerosols and other specialty product containers.

* * *

Pete Reilly, long-time (ten years) treasurer of the CSMA, has been nominated for well-deserved election as an honorary member of the association.

* * *

Still another package type is claiming superiority over the aerosol for dispensing perfumes and colognes. Lyric Industries, Inc., New York, is marketing its fragrance in a roll-on package the size of a lipstick. Advertising reads "No more wasteful sprays . . . no more throwaway dispensers . . . no more dabbing." From what we've seen of roll-on deodorants (despite their current success) we wouldn't ever bet on roll-ons against aerosols.

* * *

In what is described as the "first grocery-premium appearance for any high-fashion French perfume," U.S. Borax & Chemical Corp. (20 Mule Team Borax") and Parfums Schiaparelli have arranged a box-top premium offer involving the Borax product and Schiaparelli's "Schocking" aerosol spray vial. The $5 aerosol perfume will be sold for $2 plus a "20 Mule Team" box-top.

* * *

Aerosol Packaging Co. Ltd., Bracknell, England, ran into some slight trouble with an aerosol float during the Bracknell Carnival Procession in August. Girls on the float sprayed the air with snow foam and perfume during the course of the parade, but later some of the spectators complained that the liquid had stained hats and clothes. A spokesman for the firm discounted the complaints, pointing out that the aerosol snow used is a commercial product which can be easily cleaned off and which most likely "would have been lost in the atmosphere *before* reaching the crowds."

* * *

Aerosol Techniques, Inc., one of the first among the aerosol companies to have its own newsletter, now has an internal newspaper for its employees. It is edited by Philip H. Kloppe, Jr., the company's manager of quality control.

PETERSON FILLS *Both*... LIQUIDS AND AEROSOLS

A *Complete* Packaging Service That Can Mean Important Freight Savings To You...

AEROSOLS...
filled by efficient, accurate, high-speed pressure or cold-filling methods with halocarbon or hydrocarbon propellants (or a combination of both).

LIQUIDS...
filled in metal, glass or *plastic* in any size from 2-ounce containers to 55-gallon drums.

And when your products must be sent to common destinations in different types of packages, Peterson can do all the filling and, then, combine the various types into dollar-saving single shipments. For complete details, write, wire or phone...

PETERSON
Filling and Packaging Co.
HEGELER LANE • DANVILLE, ILLINOIS

NOW ARPEGE by Lanvin,

for accurate spray control

selects metered valves by VCA of course!

Arpege by Lanvin, the world's most famous fragrance, in its popular black and gold container is now even more valuable... in greater demand, because it is metered by a VCA quality valve and custom-made actuator. The spray is truly a measured, accurately dispensed fragrance in a new exciting form. The exclusive Lanvin process, with its inimitable magnificent fragrance of Arpege, is used only as milady needs it. Never any waste, never too much or too little! Positively, at the finger tip's control. Yet, the package is at the same retail price.

The VCA B18F Metered Valve, in a 2 oz. replaceable bottle, assures perfect protection against evaporation... perfect product quality from filler to customer.

VCA's exclusive one-source service can help your product to greater success, too. Call VCA today, or send specifications for valve samples and prices.

VCA INCORPORATED

CSMA

VALVE CORPORATION OF AMERICA, Inc.
1720 Fairfield Ave. • Bridgeport, Conn.